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CAOUTCHOUC GUTTA-PERCHA

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THE NEW FEDERAL RESERVE BANKING SYSTEM.

THE Federal Reserve banking system which, after many months of preparatory work, was put into operation November 16, marks the greatest change in our financial methods since the establishment of the National bank system over fifty years ago. Briefly, this new banking scheme will substitute commercial credits in the place of government bonds as a basis for bank issues. The old system now being displaced was exceedingly inelastic; under it there was too little currency when it was most needed and too much when it was not necessary. It is confidently believed by financiers generally that the new method will prove a remedy for this condition. When business is active the new reserve notes will be issued against sound commercial credits, and when business activity subsides and credit is no longer needed in the same volume, these bank notes will be deposited in the bank and retired.

It is believed that under this new system of banking the annual stringency caused by the necessity of funds for moving the western crops will be avoided and, better than that, that the panics which have recurred from time to time, and which have played such havoc with American business, will be averted.

The new system will not provide funds for building operations, for enlargement and equipment of factories, but will simply be supplied to those who are handling commodities which can easily and immediately be converted into cash.

One feature of the new Reserve Bank system which will be of particular interest to those engaged in foreign trade is that part of the act which permits national banks to deal in foreign acceptances. For instance, if an American manufacturer wants to purchase material in a foreign country he arranges with a bank engaged in international operations to draw the necessary funds. The bank then stamps this draft "Accepted," thereupon becoming responsible for its payment. This acceptance, consequently, is good in any part of the world where the bank has credit. And, vice versa, if a foreigner wishes to purchase American goods he applies to the international bank in his city for a similar acceptance. This significant expansion of the financial operations of our banks, together with the establishment of branches of leading North American banks in South American cities, must greatly facilitate commerce between these two continents. No longer will there be any excuse for carrying on trade between North and South America by the circuitous and expensive European route.

ENGLAND'S RUBBER EMBARGO.

THAT there is a substratum of uneasiness on the part of American manufacturers because of the embargo is evident. Their visits to Washington and letters and telegrams to the State Department prove it. Yet there is a decided vein of optimism evident also. That England intends to stop rubber from going to Germany or Austria they believe. That a stoppage of shipments to the United States would help goes without saying. Perhaps, and probably, a bit later shipments could be resumed under such guarantees as would convince England that the United States was to be the ultimate destination. Again, with the Suez canal threatened, England may wish to stock up while she can. If the war goes on she and France will need lots of rubber for tires, ground sheets, etc. A big stock of rubber in London or Liverpool is only a common sense safeguard. Once accumulated, shipments to the United States would undoubtedly be resumed.

The view of some that England is going to effect a corner on plantation rubber and boost the price is too weird to be considered. It isn't the way she does things. Besides, the United States is too good a customer to treat in any such fashion. So taking it all in all, the confident belief is that there will be plenty of rubber and that there will not be any great increase in price.

DRY AND WET SEASON PLANTATION RUBBER.

FOR some time past an American rubber factory has been testing the tensile strength of rubber from an Eastern plantation in which it has an interest. One result has been the discovery that rubber gathered in the dry season has twenty-five per cent. more tensile strength than rubber from the same trees gathered in the wet season. If this is found to be the case generally there will in time be two added grades to plantation sorts, i. e.—Wet and Dry Season.

THE FAR EAST KNOCKING AT OUR DOORS.

UNDOUBTEDLY one strong actuating influence which has moved the English to put an embargo on the shipment of rubber from their Eastern colonies to American ports is the fear that Eastern rubber might get the habit. It is obviously to the advantage both of the Eastern planters and of American manufacturers that rubber should be shipped direct from one to the other, but it is equally obvious that this method would not be looked upon with favor by rubber circles in London.

But while direct shipments may not take place, at least from British colonies, during the war, it is quite probable that they will follow its conclusion, for the East is exceedingly anxious to get into direct touch with the largest consumer of its plantation product. Interesting light is thrown on the Eastern attitude by two letters which appear on another page in this issue. One comes from a firm of Rotterdam dealers who market the rubber from a number of Dutch estates in Java and Sumatra. They ask for information as to the best way to get in contact with American customers. They write: "We have gone so far as to suggest the idea of establishing an office in the United States for joint account of our companies to sell our product there; and we have considered the possibility that the Americans might work hand in hand with us to open a market in your country direct, instead of taking the way via England."

The other letter comes from a correspondent who has contributed before to the columns of this publication and who has long been familiar with conditions in the East. "There is now the chance of a lifetime," he says, "for American firms to buy rubber direct here in Singapore, and to establish direct relations with the center of production. Rubber was selling here in August at 1s. to 1s. 6d. per lb.—prime smoked sheet—but no orders could be obtained from anywhere. Where were your manufacturers? If they had had agents here they would have had the chance of a lifetime to lay in stocks on the ground floor."

It is not characteristic of American manufacturers to continue the long way around when there is a short cut in plain sight, and there is not likely to be an indefinite continuance of the system by which Eastern rubber intended for New York must first go somewhere else, some distance out of its way, with no other result than that its receipt is materially delayed and its cost considerably increased.

THE RUBBER CLUB'S RELIEF FUND.

THE relief fund being raised by the Rubber Club of America for the assistance of the Red Cross work and for the succor of the Belgian victims of the war, had on November 25 reached nearly $2,000. This sum will undoubtedly grow considerably during the present month. A more extended reference will be found on another page to the club's appeal to its members and their response. It will be noticed there that, while perhaps a majority of the members contributed to the fund the sum that would normally have been paid for attendance at the usual annual banquet, quite a good many others gave contributions far in excess of this sum—many sending in contributions of $25, some of $50, and some exceeding $100. This is an excellent showing in view of the fact that appeals for the Red Cross work and for the Belgian sufferers have been made from many quarters during the last few weeks and without doubt a large number of the club members had already made substantial contributions to these causes through other channels.

ONE PITFALL THE EXPORTERS SHOULD AVOID.

THE opening door of the South American market—which will be likely to open wider with the continuance of the war—will undoubtedly attract not a few American manufacturers, and among them makers of various rubber goods. Their success in this field will be in proportion to the discretion with which it is entered.

The difficulties in the way of inaugurating profitable

trade relations with the republics to the south—difficulties in financing, in the commercial traditions and customs of the South Americans and in their national and racial differences from ourselves—have been discussed at considerable length in these columns. But there is one pitfall that has trapped unwary exporters in the past, and which will undoubtedly continue to claim still further victims, that can easily be avoided.

Under the laws of most of the South American republics a trade mark becomes the property of the man who first enters it for registry, without any regard whatever to the ownership of the goods on which the trade mark appears or the length of time it may have been in use. To illustrate,—If an American manufacturer, after a great expenditure of time and money and effort, succeeds in getting a market for his goods, let us say in Argentina, and the Argentine dealer to whom he entrusts the distribution of his merchandise—or, as a matter of fact, any other dealer—registers the trade mark, he can effectually estop the American manufacturer from marketing his goods in that country through any other agent than himself. This is not a theoretical situation, for it has occurred in a number of instances.

Once this pitfall is seen, the remedy is of course simple, namely,—that the American manufacturer, before he enters into any trade relations in any South American country, should register his trade mark in that country in his own name and avoid the anomalous and most unhappy position of being the owner of the goods but having the trade mark of these goods, and with it the absolute control of their sale, fall into alien and often hostile hands.

WHAT THE LOSERS WILL HAVE TO PAY.

WHETHER the end comes soon or late, of the most stupendous war the world has ever seen, somebody will have to pay. It is not going to end in a love feast and embraces all around. The governments and peoples in this struggle are grimly in earnest, and when the loser sits down at the council table with the plenipotentiaries of the victors he must prepare himself for some very unpalatable demands. The material losses of all contestants have been stupendous and, whatever the loser or neutrals may say, the victor will not be backward in demanding compensation.

Passing considerations of money indemnities and changes in the map of Europe, the question of interest to readers of THE INDIA RUBBER WORLD is what is going to be done about the colonies of the warring nations. One thing is extremely probable. If Germany wins, she will possess every foot of Africa from the Strait of Gibraltar to the Cape of Good Hope. With England, France and Belgium she is at war. Italy must be punished for her failure to maintain the Triple Alliance and Portugal for her announced readiness to support England when called upon. This accounts for all but Spain's insignificant possessions and the little states of Liberia and Abyssinia, which would wait their turn with such equanimity as might be possible. It is not likely that Germany would care for an Indian problem just yet.

On the other hand, if Germany loses she is likely to be stripped of every foot of her possessions outside of Europe, and they would be divided, of course, between France and England. Kaiuchau, on the coast of China, which Japan lately captured from Germany, will, no doubt, be returned to its original owner, if Germany is defeated. But if the latter wins, Japan will come in for a bad quarter of an hour, in which China will share. An even more momentous question would arise for the United States if Germany should win and should demand possession of some or all of the West Indian possessions of England and France. The Monroe Doctrine would require the United States to oppose the coming of another strong European power as a neighbor. But Germany does not recognize the Monroe Doctrine and a highly interesting situation would arise.

THE INCORPORATION IN THE EASTERN STATES OF NEW companies having a capital of one million dollars or over represented for the month of September an aggregate capitalization of fifty-four million dollars. This was an increase of four million over August and of twelve million over September of a year ago, but it is materially below the average for the last three years. For the twelve months of 1912 and for the first five months of 1913 the monthly capitalization of new corporations only twice fell below the one hundred and fifty million mark, the average being well over two hundred million dollars a month. There was a marked falling off in June of 1913 and only twice since that time has the monthly aggregate exceeded one hundred million.

For the first nine months of the present year the total capitalization of new corporations of a million and over in the eastern states was six hundred and seventy-two million dollars, which is but slightly over one-half of the amount for the same period in the preceding year and not much over one-third of the aggregate for the same period in 1912. The new capitalization during the present year has averaged a little less than seventy-five million dollars per month, which, though low in comparison with recent years, is undoubtedly quite high enough to harmonize with present conditions.

Belgium and Its Rubber Trade.

HOWEVER opinions may differ among Americans in regard to the motives and merits of the great European conflict—though probably American opinions differ very little—there is one phase of the situation regarding which there is no difference of opinion, and that is the pitiful estate of Belgium, which, at peace with all its neighbors and without any quarrel in any part of the world, has been ground between the upper and the nether millstone and brought into a condition of almost total ruin.

It is hardly necessary to draw any picture here of the universal distress and misery prevailing in that unhappy Kingdom, as the daily press has done this work very thoroughly during the last three months and every tourist who has returned to these shores from any part of Belgium has added to the sad recital. Practically all the able-bodied men among Belgium's population of seven and a half million people have been drafted into service, and the women and children who are left behind, many of them, can find shelter only in the debris of their former homes and have little to subsist upon except the hope of relief from America's generous contributions.

KING ALBERT OF BELGIUM.

Practically all industries in Belgium, for the time being, have been destroyed, except such as may be turned into military channels. The rubber industry is no exception. As an illustration of its present condition the case of the Englebert company, of Liege, might be cited, whose New York representative states that nothing has been heard from the factory since the German bombardment, but through other channels it has become known that this factory, which before the opening of hostilities was engaged in making tires, tubes, tennis balls, mechanical goods and druggists' sundries, has been seized by the Germans and is employed in the manufacture of tires for the Kaiser's military motors. Accurate news from the other rubber manufacturers in Belgium is difficult to obtain, but it is quite safe to say that none of them are operating except those that are being operated for military purposes.

RECEIVING RUBBER AT ANTWERP.

The rubber industry in Belgium was in a prosperous condition up to the first of August, when the Germans invaded that Kingdom. Belgian rubber manufacture began as far back as 1852, which was only a few years later than the beginning of rubber manufacture in the United States. In that year a factory was established at Molenbeek St. Jean by Gustave Luyckx, of Brussels. A very interesting phase of Belgian rubber history lies in the fact that the second factory to be established in that country—which began operations in the late 50's—was founded by an American, and quite a remarkable American, Jonathan Gage Stickney, who was born in Beverly, Massachusetts, in 1819, became associated with Samuel Colt, the inventor of the Colt revolver and an uncle of the present president of the United States Rubber Co. About the middle of the last century Mr. Stickney went to Europe to establish factories for the manufacture of the Colt firearms, but through some misunderstanding with his American principals, he left their employ and took a pleasure trip to Paris, where he fell in with Charles Goodyear, then making his famous rubber exhibit at the Paris Exposition. Stickney at once saw the possibilities in this new industry and under Goodyear's direction erected a factory in France for rubber manufacture. Soon after, about 1859, he built a second rubber factory, this time locating at Menin, Belgium, only a few miles southeast of Ypres, which has figured so conspicuously in the present war. He not only erected the building but he built his own washers, mixers and calenders and all the rubber machinery, and he did it so well that it was still in active operation in the same mill 50 years later.

Since those early days the number of rubber factories in Belgium and its general interest in this line of manufacture have steadily increased, so that it has at present, or, more properly, had before the opening of the European conflict, 12 considerable factories—3 in Brussels; 3 in Liege—one of them the plant of Englebert & Cie referred to above; 1 in Ghent—the Colonial Rubber Co., Limited; 4 in Menin—including the Michael-Jackson Co. and Defauw Freres, and one in Alost.

EXAMINING RUBBER AT THE ANTWERP MARKET.

These factories turned out a great variety of rubber goods, including hard rubber products and, latterly, rubber footwear.

In addition to the companies mentioned above there are two others which for several years past have been engaged in the reclaiming of rubber, and there were many other small work shops making rubber stamps and waterproofing clothing, bringing the list of Belgian rubber factories, all told, probably up to thirty. It is safe to say that at least 4,000 workmen were engaged in the different Belgian rubber factories before these works were compelled to close down.

The enterprise of the Belgian rubber people was shown to a marked extent by the very fine exhibit they made at the rubber show held in New York in the fall of 1912, their display including some 85 classified rubber samples, provided by the Antwerp Chamber of Commerce. Their exhibit at the London rubber exposition held last July was notable. It was referred to in the August number of THE INDIA RUBBER WORLD as follows:

"Numberless pages might be devoted to this exhibit without approach to justice in the description. It is doubtful if anything more beautiful, more comprehensive in its character or more informing generally than this Belgian exhibit has ever been seen at a commercial show. Perhaps some idea of its size may be conveyed to those who have visited Agricultural Hall by the statement that this Belgian exhibit filled the entire entrance as well as King George's Hall; and possibly the pictures here shown may afford some slight idea of its character."

But probably to the American trade the most interesting phase of the rubber industry in Belgium is the crude rubber market, situated at Antwerp. It would be very interesting, if there were space, to describe the development of Antwerp as a shipping port, but it can only be mentioned here that the authorities of the city intended to create at Antwerp the largest harbor in the world and up to 1909 had spent $45,000,000 to effect this purpose, with the expectation of spending over $50,000,000 more, hoping to complete the work by 1920. While the number of vessels docking at Antwerp in the years 1911 and 1912 was not much over one-third of those entering the port of Hamburg, the Antwerp tonnage for these two years exceeded the Hamburg tonnage. But the one feature of Antwerp commerce of interest to the readers of this paper is its commerce in crude rubber. Its imports of this article increased during the last 20 years from 724 tons to 7,703 tons. Here is a table giving the annual imports for the last 21 years:

The Imports of Crude Rubber at Antwerp from 1893 to 1913.

1893	*tons* 724	1900	*tons* 5,698	1907	*tons* 5,054
1894	1,393	1901	5,849	1908	5,035
1895	1,406	1902	5,403	1909	4,685
1896	1,115	1903	5,726	1910	4,058
1897	1,679	1904	5,763	1911	4,335
1898	2,014	1905	5,713	1912	4,777
1899	3,402	1906	5,772	1913	7,703

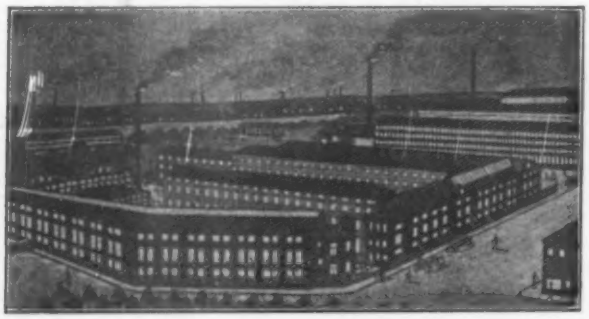
Ten to fifteen years ago nearly all the rubber imported into Antwerp came from the Congo Free State. For instance, of the total in 1901—5,849 tons—5,417 tons was Congo rubber and only 432 tons came from other sources. But during the last few years Antwerp has received increasing quantities of rubber from the Belgian plantations in the Far East. The table given below showing all the sources of Belgium rubber importations for the last three years will be found interesting:

SECTION OF THE BELGIAN EXHIBIT AT THE LONDON RUBBER EXHIBITION.

Imports of Crude Rubber into Belgium for 1911-12-13 and the Chief Sources of Supply.

From	1911	1912	1913
Belgian Congo ..... *tons*	4,020	4,530	3,590
Ceylon		1,080	2,388
Straits Settlements	857	495	505
British Indies		47	87

United States	529	523	318
France	1,326	1,171	949
Great Britain	1,550	2,001	3,035
Netherlands	735	1,119	1,361
Other countries	2,168	2,704	2,512
Total	11,185	13,670	14,745



PLANT OF ENGLEBERT & CIE.

A comparatively small percentage—ranging from 20 to 25 per cent.—of the Belgian rubber imports represents Belgian consumption, the remainder being distributed to various points. This distribution for the last three years is shown in the following table:

Exports of Crude Rubber from Belgium During the Last Three Years and Principle Points of Destination.

To	1911	1912	1913
Germany ..... *tons*	1,458	1,623	1,919
United States	2,651	2,726	2,775
France	1,045	1,455	1,058
Great Britain	917	801	717
Hamburg	1,064	906	783
Netherlands	680	1,011	1,176
Russia	1,021	1,899	2,091
Other countries	331	741	572
Total	9,167	11,162	11,091
Total imports	11,185	13,670	14,745
Total exports	9,167	11,162	11,091
Belgian consumption	2,018	2,508	3,654

ENTRANCE TO BELGIAN EXHIBIT AT THE LONDON RUBBER EXHIBITION.

It will be noticed from the table of imports above that Belgian rubber imports from the Far East have increased rapidly during the last three years, amounting in 1913 to 2,980 tons, as compared with 857 tons two years earlier. The greater part of this rubber came from the estates established by Belgium in Malaya, Java and Sumatra. But the story of rubber importations in Belgium during the last thirty years has to do chiefly, in fact almost entirely, with the Belgian Congo.

The first authentic information on the Congo country was given to the world in 1869 by the great missionary explorer, David Livingstone. The Upper Congo was explored by his successor, Henry M. Stanley, who organized there the International African Association, its promoter being King Leopold of Belgium. Stanley first told the world of the great material resources in ivory, rubber and other products of the Congo. The first exports from that section were confined to ivory and rubber, as the cost of transportation made it impracticable to bring any of the other products of that vast territory to the markets of the world. The shipments of rubber from the Congo began in 1887, when 33 tons were exported. The volume of exports increased rapidly, reaching 136 tons in 1890, over 600 tons in 1895, and reaching their

MAP SHOWING CONGO FREE STATE.

maximum, 6,614 tons, in 1901. This rubber was largely extracted from the *Landolphia* vine and secured in such a way that in most instances the vine was destroyed. THE INDIA RUBBER WORLD took early cognizance of the rubber possibilities of the Congo and in its December issue in 1892 it printed a two and a half page article descriptive of the development of that country and giving the first accurate map of the rubber section of the Congo that had appeared in this country.

The prospects for profitable operation were so great that many companies were formed to extract the Congo rubber and to develop the country in various ways. Among the pioneers in this work was an American, Warren C. Unckles, of New York, who arrived at Boma in July, 1892, and proceeding thence up the Congo river, established rubber camps along the tributaries of the Kassai, which flows into the Congo from the south.

The Conference of the Powers held at Berlin in 1885 constituted this territory into the Congo Free State, with Leopold II as sovereign, and from that time for the next 23

years Leopold had autocratic powers, the Congo being governed through three secretaries general, namely, of foreign affairs, finance and interior, all appointed by the King and responsible only to him. The various companies that received concessions in the Congo were as a rule compelled to give the government either one-half of their capital stock or, which amounted to the same thing, one-half of their profits. Some of these companies enjoyed large profits for many years. The Compagnie du Kassai is said to have made a profit in the year 1905 of $1,500,000, its dividends that year being three times the face value of its shares. One of the companies which received a very large concession—amounting in two tracts to 2,471,000 acres—from Leopold was the American Congo Co., incorporated under the laws of the State of New York in October, 1906, but soon absorbed by the Intercontinental Rubber Co., a New Jersey corporation formed a few months later to take over these concessions.

It is safe to say that no other rubber producing country in the world has received the attention that has been directed to the Congo. For a number of years before Leopold gave up his control of the Congo Free State the whole Christian world was shocked from time to time by the stories that reached it of the atrocious treatment of the natives, who, it was stated, were compelled to gather rubber by the threat and infliction of various kinds of torture. Several books were written on this subject, pro and con, and it was made the theme of warm debates in the House of Commons. Finally the Belgian government appointed a committee to investigate, which, while denying actual atrocities, admitted that much pressure was brought upon the natives to compel them to do the desired amount of work. In November, 1908, the Congo Free State passed from under Leopold's rule to the control of the Belgian parliament, and since that time nothing has been heard about cruelties on the Congo.

CLEANING RUBBER IN THE CONGO COUNTRY.

There are five large companies in Antwerp which, up to the closing of that port, were engaged in the importation of rubber, this number including Grisar & Co., Bunge & Co., Credit Colonial et Commercial—formerly L. & W. Van de Velde—and G. & C. Kreglinger.

Whether the outcome of the war will make any change in the ownership of the Congo country remains to be seen, but the future production of rubber from that section will not depend upon the flag that may fly on the banks of the Congo and the Kassai, but upon the price of crude rubber in the markets of the world. Great efforts have been made during the last few years to keep the *Landolphia* vine from destruction, and since 1910 planting has been done on quite an extensive scale. The Belgian Government had planted up to 1912 three and a half million *Funtumia* trees, 250,000 *Hevea* and about 150,000 *Manihot* trees. Systematic tapping experiments have been carried on by both the government and private interests for the last three years, and there is every reason to believe that the *Hevea* can be made to produce to advantage along the Congo; but if the eastern planters finally succeed in bringing their rubber to market at a shilling a pound, the planters along the Congo will be confronted with a problem in competition that may be extremely difficult for them to solve.

SHIPPING RUBBER ON THE CONGO.

BOOTH LINE SERVICE.

The steamship service between the United States and Northern Brazil and the Amazon has at no time since the beginning of European hostilities been seriously affected. The usual sailings and the regular schedule have been maintained by the Booth Steamship Co., and every effort has been made to afford the usual facilities for the movement of rubber from the Amazon Valley. Imports of crude rubber have been received without interruption, and in some instances in quantities above normal. The difficulties of operating ocean going steamships at the present time are many. For instance, the war risk, insurance on hulls and particularly the decline in exports from New York to Brazilian ports, make the shipping business between North and South America extremely uncertain, but the Booth line is determined to keep up efficient service in spite of the heavy additional costs and exceptional risks due to war.

WHAT IS "JALUBA" OR "JAPUDA" GUM?

An inquirer recently called up this office in search of information regarding "Jaluba" gum. A few days later a letter was received from another quarter with this question: "What is Japuda gum?" Unfortunately, this office was able to throw no light on either subject. Possibly Jaluba is another name for Japuda, or, conversely, Japuda but a synonym for Jaluba. Can anyone give any information concerning these two mysterious gums?

The Use of Rubber in the Armies of the World.

By Leon L. Watters, M. D., Hospital Supply Co., New York.

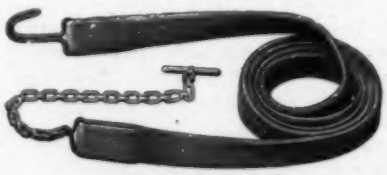
STRIPPED of its glamor, the basic motive of an army at war is to kill or maim as many of the enemy as possible by the employment of any of the many recognized "legitimate" means for dealing death and destruction. Thus laid bare, war exposes itself in all of its horror to the gaze of the lover of peace, as conforming exactly to General Sherman's classic designation of it.

This article does not aspire to deal at all with the ethics of war; it concerns itself solely with one economic phase of the practice of warfare, namely, the economic employment of rubber in its armamentarium. But the anomalies of strife with arms are immediately brought to the mind of the writer when he contrasts the elaborate methods which have been worked out by some of the brightest minds of nations with the one end in view of creating havoc, death and devastation, with the equally elaborate means that these same nations provide for alleviating the sufferings, injury and poverty which are the immediate results of war. While in times of peace the life and property of the individual are sacred and extreme precautions are taken to safeguard his well-being; while all the methods of science are exhausted to save the life of even the most humble citizen; while the skill of the most expert surgeon is brought to bear to repair the slightest injury to a helpless child or a decrepit octogenarian; yet, in time of war, every available means is employed to kill or maim the flower of a nation's manhood. The individual and the life or injury of the individual, as such, are lost sight of. Armies are simply masses with large numbers of units; they are employed as masses with a brutal disregard of the life and limb of the individual except as his death or injury, in large enough numbers, affects the fighting ability of the mass.

RUBBER BANDAGES.

The armies of every civilized nation worthy of the name have special and well-organized branches of the service whose sole object is to care for the health and welfare of the soldier in times of peace and to administer to the injured and the sick in times of war. A story prevails among the correspondents who were on the scene to the effect that during the Balkan war, trainloads of injured were dumped bodily into plague camps and encouraged to die. The argument of the commanders was that it costs more to take care of a wounded soldier, whose usefulness has been impaired, than to bury a dead one. This story, whether true or not, is opposed to the customs of the nations now at war. Their commanders pay attention to the care of the wounded from two distinct motives; the first is the motive of humanity, which makes it incumbent on a nation at war to care for the injured of its own army and of its enemy; the second motive is an economic one, based upon the value of the individual soldier as a fighting unit. The soldier who is temporarily disabled and who can be nursed back to health and healed of his wound can again enter the ranks and become active as a useful member and thus help to effect the destruction of the opposing army.

To take care of the wounded in such manner that suffering is reduced to a minimum and the maximum number of lives saved, requires that the facilities of the hospital be duplicated to such an extent that at least temporary relief is as close as possible to the scene of hostilities. Thus the requirement of quick transportation is immediately presented, for means of relief must be such that it may be transported from place to place with practically the same speed as a moving army, which means often over rough roads and under adverse conditions. Lightness becomes of prime importance as well as the property of being compressed into small bulk. Beyond this is the requirement of impermeability to moisture. It is for these reasons that rubber becomes the ideal substance for employment in the manufacture of munitions for the Medical Supply Corps of armies in the field.



RUBBER TOURNIQUET.

The uses of rubber for other than medical and surgical purposes in the army are well known. To enumerate only a few there might be mentioned the following: Waterproof coverings for wagons, guns and gun-carriages, army chests and the like, where there is employed either a rubber-covered fabric similar to rubber sheeting or fabrics of cloth which are rendered waterproof by being impregnated with compounds of rubber. Rubber boots and shoes are part of the regular equipment of most armies, though they are made use of only under special conditions, on account of the more lasting qualities of leather. Rubber sheets and blankets are in extensive use for protection from damp, and rubberized fabrics are even employed as tent coverings. Rubber-covered rain coats are in extensive use by the officers and chapeaus or mantles are employed by the privates as protection from rain. There is a growing tendency to employ rubber-coated fabrics wherever possible as coverings for medical pouches, first-aid kits, etc., and the

U. S. ARMY STRETCHER.

rubber manufacturers will find the authorities of the Medical Supply Depots desirous of welcoming any suggestions for further applications of rubber to existing equipment.

Of decidedly varied employment, however, are articles of rubber for medical and surgical purposes. Experiment and experience have shown that articles of rubber fulfil the requirements both of lightness and of freedom from breakage. We enumerate a few of the more important items employed in the Field Medical Supply Department of our own army: Hot-water bottles; ice-caps; syringes, both of hard and soft rubber; atomizers; powder dusters; catheters; stomach, colon and rectal tubes; operating cushions or "Kelley pads"; air cushions and air beds; rubber gloves and finger cots; tubing; sheeting; tourniquets; aprons; funnels; bandages; crutch tips; medicine droppers; collapsible drinking cups, folding buckets and bath tubs; parts of inhalers; washers for hypodermic and other syringes.

Incidentally, the Medical Supply Division of the United States Army is said to be in a position to take care of the wants of an army far in excess of our present standing army, on forty-eight hours' notice.

UNITED STATES ARMY TOURNIQUET.

In addition to these, the governments use extensive quantities of hard rubber goods for general purposes. These embrace combs; tooth, hair and nail brushes; soap dishes, etc.

The Medical Supply Section of our own army is under the immediate jurisdiction of the surgeon-general, whose office is in Washington. Supplies for the army are purchased by the officers in charge of the various Medical Supply Depots, which carry stock in New York, St. Louis, San Francisco and some other cities. Supplies are generally purchased upon competitive bids. Specifications for annual stocks are issued once a year, but additional specifications are issued almost continually during the year. The Field Medical Supply Depot is a special branch of the service, with headquarters at Washington.

THE EMDEN'S END A RUBBER RELIEF.

It is stated that the "Emden," the German cruiser which sunk twenty-five or more merchantmen belonging to the Allies before it was brought to book by the Australian "Sydney," cost the rubber industry, or more accurately the rubber insurers, about a million dollars. Three of the merchantmen sunk by the "Emden's" guns had cargoes of rubber from the Far East, bound for London, amounting, all told, to about 3,000 tons.

A NEW LIFE-SAVING INVENTION.

A recent report of Consul General R. E. Mansfield, stationed at Vancouver, British Columbia, contains a description of a life-saving suit invented by Captain More, a shipmaster of Vancouver, and patented in Canada, Great Britain, France, the United States and Belgium. It is made of rubber and can be easily put on. It is entered from the top, is equipped with a hood which, when adjusted, leaves only the face exposed to the water. A belt, passing around the body just below the arms can be quickly inflated by blowing into a tube attached. The wearer floats in an upright position and watertight pockets on each side provide receptacles for food and liquids. Successful experiments have recently been conducted and demonstrations made in the use of this suit.

AMERICA AND THE EUROPEAN WAR.

By Ludwig W. Schmidt.

FROM general information received by the writer in private letters, it seems that the German rubber industry was fairly active during the first months of the war, and, considering the enormous demand for war materials and the influence rubber has on many industries connected with the production of such supplies, it appears that the demand for rubber manufactures will continue—at least as long as Germany can keep the enemy outside her boundaries. The rubber industry in England is certainly as busy as it is in Germany, and its opportunities are greater. England can add to the demand from her own war office the considerable amount of private business done by Germany before the war, provided her industry is able to replace German goods in quality and price. Little definite information has been obtained regarding the French rubber industry, but it can be surmised that the works which are interested in the manufacture of war material will be kept busy.

Under these circumstances it is clear that the demand for raw rubber must be very large. Germany cannot get new supplies. It has, as far as can be ascertained, large quantities of raw rubber in stock, which, however, must some day be exhausted; and it is an interesting problem what Germany will then do. It is very likely that her reclaiming industry is already supplying that part of the demand which until now has been supplied by American reclaimers. It is impossible to say whether any amount of reclaimed rubber is still leaving this country for Germany. If so, the quantity must be small.

Everything, therefore, points to the conclusion that at the end of the war stocks in raw material as well as in reclaimed rubber will be small and that large replenishments will have to take place. It is impossible to say what the end of this conflict will be and what the economic situation in the warring countries will be at its conclusion. However, it seems practically certain that a new and strong demand for raw material and reclaimed rubber will arise as soon as normal conditions have been restored. This will materially affect the American reclaimer. The European field has been a very good one for him in the past and there is no reason why it should not again be as satisfactory. Of course it will take some time to resume old relations, and confidence will be shaken. Nevertheless, it would be bad policy to let the war interfere with development of business in Europe. The markets of England, France, Germany and some of the other countries are closed, but those of Spain and Italy remain open and it is to be hoped that these nations will be able to maintain their neutrality. Both these markets can be entered successfully by the American reclaimer, and it would be advisable to take steps at once to develop this export business, while Russia, one of the largest producers of reclaimed rubber, is greatly hampered in her movements and the Russian industry suffering in consequence. Having secured a foothold in these two markets, it will be much less difficult to resume business relations in the older markets when peace is restored than it would be if relations had been entirely cut off.

Incidentally it may be remarked that, as a result of the war, there will not only be a large demand for reclaimed rubber, but in addition to this there ought to be an increase in the supply of waste rubber. Whether this will be of the first class, of course, is doubtful. War waste as a rule is not of the highest grade, but the cessation of collection during the past few months will bring in its wake a larger volume of material, which ought to benefit the reclaimers in the United States. It seems probable, therefore, that the war, while at the moment stopping the business of the American reclaimer in Europe, will not injure it permanently. On the contrary, a large demand can be expected when normal market and manufacturing conditions are restored.

The Work of the Bureau of Standards on Rubber.

THE constitution of the United States gives to Congress the right to fix the standards of weights and measures.

Whether this provision of the constitution was necessary to justify the institution of the Bureau of Standards at Washington need not be discussed, but it may be cited as the authority for the action of Congress in providing for this bureau.

FIG. No. 1.

There has been confided to it the charge of all the standard weights and measures in possession of the federal government, or at least such of them as are the standards from which our weights and measures are derived.

In connection with the standardization of weights, measures and apparatus of many kinds there is a large amount of work conducted along other scientific lines, including mechanical, chemical and electrical. Along what are known as more practical lines a great number of tests are made on a wide variety of materials, particularly those used in government supplies. Among the articles so used and tested are many kinds of rubber goods.

In many cases this bureau acts as the examining chemist for the departments which purchase the supplies. In doing this they have a broader idea than the ordinary chemist who is endeavoring to protect his client only, for the bureau tries to work with the manufacturer as well as with the purchasing agent so as to help the maker to produce the best goods as well as to provide those that are best suited for the government's use. The private consumer ordinarily wants to get the best goods and is not disturbed if others—particularly if they are competitors—get an inferior quality. Nor does the ordinary purchaser endeavor to help the manufacturer who furnished the goods. But this bureau believes it good policy to help the manufacturer, so as to secure desirable products for the government.

In pursuing this policy much work has been done on the preparation of suitable specifications which shall be at the same time just to both parties and allow the most economical article that is adapted to the purpose.

In the rubber line one notable instance of co-operation of this bureau with manufacturers and consumers is its work with the Joint Rubber Insulation Committee. Mr. J. B. Tuttle of the

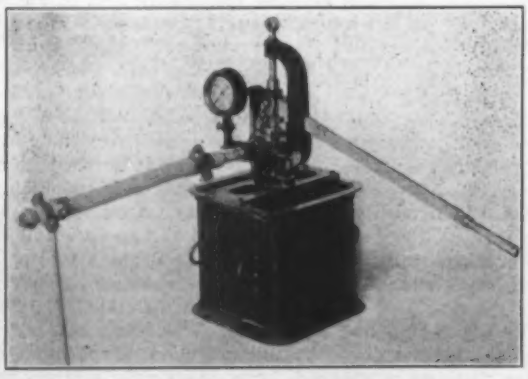


FIG. No. 2. APPARATUS TO DETERMINE BURSTING PRESSURE.

bureau acted with the committee, and its proceedings were republished for general distribution with the approval of the bureau.

In 1912 Reprint No. 174 from the bulletin of the Bureau of Standards Vol. 8, No. 3 was published, entitled "The Determination of Total Sulphur in India Rubber," It was by C. A. Waters, associate chemist, and J. B. Tuttle, assistant chemist. A pamphlet entitled "The Sampling of Rubber Goods," was reprinted in the "Journal of Industrial and Engineering Chemistry," with the permission of the director of the bureau of Standards.

Circular No. 38 of the Bureau of Standards, published for distribution in 1912, is entitled "The Testing of Mechanical Rubber Goods," and the second edition was published in April, 1913. This contains notes on the sources of supply and collection of rubber, rubber substitutes and reclaimed rubber, as well as descriptions of the processes of manufacture, also physical testing of rubber, chemistry of rubber and regulations regarding tests. Most of the apparatus used by the bureau in the work is here illustrated, as well as the methods used in testing.

FIG. No. 3. TESTING MACHINE OPERATED BY STEAM OR WATER.

In performing the chemical analysis there is no special apparatus used not found in most laboratories, but the extractors are always the most important feature of rubber analysis. Figure No. 1 shows the Wiley Soxhlet extractor as modified by Ford.

Figure No. 2 shows a hand testing apparatus for determining the bursting pressure of hose. Figure No. 3 illustrates a testing machine operated by a steam or water cylinder. Back of the machine is a press for cutting samples. Figure No. 4 shows a hand press and sample cutter with the cut sample beside it; while Figure 5 shows a set of rubber mills geared to, and operated by, a motor. The mills include a cracking mill, a mixing mill and a three-cylinder calender for making frictions, etc. The mixing mill and the calenders are arranged for steam and water circulation through the rolls. This apparatus has just been put in and it is expected that some very valuable experimental work will be accomplished with its aid. THE INDIA RUBBER WORLD has obtained from the bureau a description of their methods of chemical testing which follows in full.

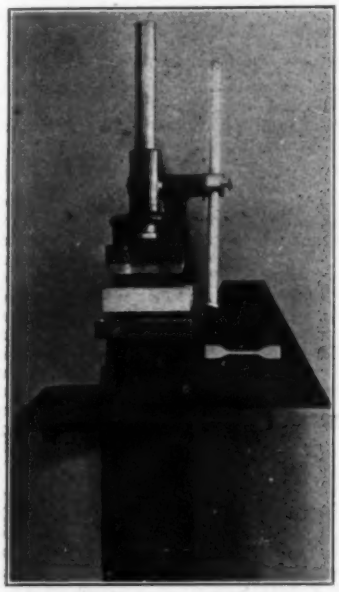


FIG. No. 4. PRESS AND SAMPLE CUTTER.

THE BUREAU DESCRIBES ITS METHODS OF TESTING.

DEPARTMENT OF COMMERCE. BUREAU OF STANDARDS, WASHINGTON.

The methods given below are those now in use at the Bureau of Standards and are offered essentially as they appear in the sheets of instructions handed to all rubber analysts in the Bureau. They are not entirely original, but have been compiled from the various publications on rubber analysis and from the information gained through the routine testing of rubber goods for delivery on government contracts, and co-operative research with various scientific organizations. These methods are always subject to revision whenever the Bureau is convinced that changes would improve them.

PREPARATION OF SAMPLES.

1. SOFT RUBBER.—Prepare a sample of not less than 25 grams, taking pieces from various parts of the original sample. With those having cover and tube, separate samples of each shall be made. From fire hose remove the backing before grinding.

2. GRINDING.—The sample shall be cut into small pieces and then run through grinder, taking for analysis only such material as will pass a 20-mesh sieve. Care must be taken to see that the grinder does not become appreciably warm during the grinding. If the nature of the material is such that it gums together so that it will not pass through the sieve (as would be the case with undervulcanized samples), it will be sufficient to pass the material through the grinder twice and accept all the material for the final sample. Crude rubber shall be cut with scissors.

3. HARD RUBBER.—Samples of this material shall be prepared for analysis by rasping.

REAGENTS.

4. Acetone shall be freshly distilled over anhydrous potassium carbonate, using the fraction obtained at 56 to 57° C.

5. Alcoholic potash shall be of normal strength, made by dissolving the required amount of potassium hydroxide in absolute alcohol, and allowing it to settle. Only the clear solution shall be used.

6. The nitric acid-bromine reagent shall be prepared by adding a considerable excess of bromine to concentrated nitric acid, shaking thoroughly, and allowing it to stand for some hours before using.

7. The fusion mixture for sulphur determinations shall be made by mixing equal quantities of sodium carbonate and powdered potassium nitrate.

8. All reagents shall be of C. P. quality.

9. Barium chloride solution shall be made by dissolving 100 grams of barium chloride in one liter of distilled water, and adding two or three drops of conc. hydrochloric acid. If there is any insoluble matter or cloudiness, the solution shall be heated on the steam bath overnight, and filtered through 589 blue-ribbon filter paper.

ANALYSIS.

I—MECHANICAL GOODS.

10. ACETONE EXTRACT.—Place a 2-gram sample in an acetone extracted S. & S. paper thimble, and extract continuously with acetone for eight hours, unless the solution in the thimble is still colored at the end of that time, when the extraction shall proceed the next day for a further period of four hours. Transfer the extract to a tared 100 or 150-cc. Erlenmeyer flask, using chloroform or benzene for dissolving any material which may have separated from the solvent during the course of the extraction. Drive off the solvents at as low a temperature as possible, using a gentle current of air. Dry the flask and contents in an air bath, at 90 to 95° C.; cool and weigh. Call the residue "acetone extract, uncorrected." Calculate the results to percentage.

11. FREE SULPHUR.—Add to the flask from par. 10, containing the acetone extract, uncorrected, 50 to 60 cc. of distilled water, and 2 or 3 cc. of bromine. (If the acetone extract indicated a large amount of free sulphur, the amount of bromine used may be increased). Heat gently on the steam bath until the solution is practically colorless, filter into a 250-cc. beaker. Cover the beaker with a watch glass, heat to boiling on the steam bath, add 10 cc. of 10 per cent. barium chloride solution, and allow the precipitate to stand overnight. The next day filter the precipitate through an 11-cm. 590 S. & S. filter paper. Ignite in a small porcelain crucible, using a small Bunsen flame, and not allowing the paper to inflame; cool and weigh. Calculate the barium sulphate to sulphur by means of the factor 0.1372, and calculate the percentage of free sulphur.

12. ASH.—Wrap a 1-gram sample in an 11-cm. 590 S. & S. filter paper, and after extracting with acetone for four hours, transfer to a medium sized porcelain crucible and ignite at the lowest possible temperature; cool and weigh.

13. SULPHUR IN ASH.—Add a few drops of conc. nitric acid to the ash from par 12, stir with a small glass rod, and evaporate off the excess acid on the steam bath. Add 5 grams of fusion mixture (par. 7), and heat until fused. When cool, place the crucible in a 400-cc. beaker, cover with water, and heat on the steam bath for two or three hours. Filter into a 600-cc. beaker (reserve the insoluble residue for testing according to par. 14), add 7 to 8 cc. conc. hydrochloric acid to the filtrate, cover, and heat to boiling on steam bath. Add 10 cc. of 10 per cent. barium chloride solution, and allow to stand overnight. Treat the barium sulphate precipitate as under par. 11. Calculate to sulphur by the factor 0.1372.

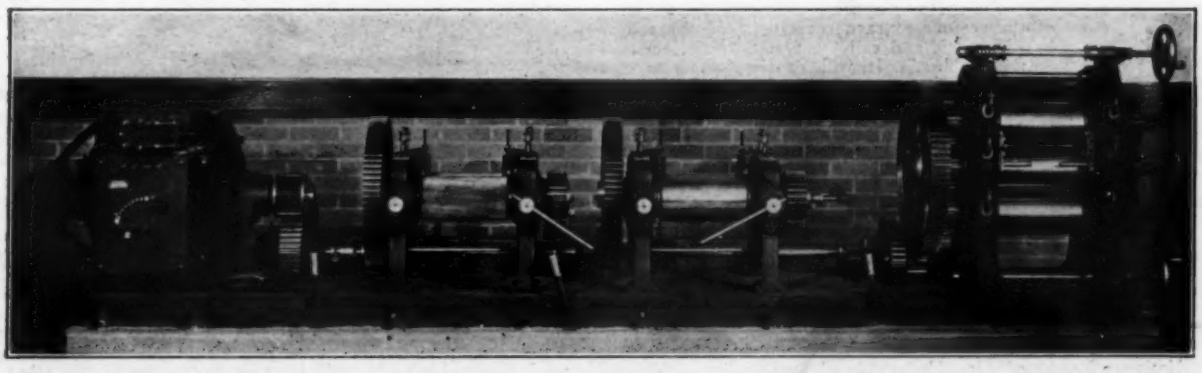


FIG. No. 5. SET OF RUBBER MILLS GEARED TO, AND OPERATED BY, A MOTOR.

14. BARYTES.—In the event that the total sulphur is limited by specification, and barytes is permitted as a filler, the latter must be determined, since the sulphur present in this mineral must be deducted from the total sulphur. The barytes is calculated from the barium in the ash determined as follows: Filter off the insoluble matter after the fusion and extraction in par. 13, wash back into the original beaker with hot water, add 5 cc. of 10 per cent. hydrochloric acid, and heat the solution on the steam bath until as much as possible is dissolved. Filter through the same filter as before, washing thoroughly with hot water. Nearly neutralize the solution with sodium carbonate, leaving it slightly acid. Saturate the solution with hydrogen sulphide, and when the lead sulphide has settled filter into a 400-cc. beaker, and wash thoroughly. The total volume should not be over 200 cc. Cover the beaker containing the filtrate, heat to boiling, and add 10 cc. of 10 per cent. sulphuric acid. Allow the precipitate to stand overnight. Filter off the barium sulphate as directed in par. 11. Calculate the percentage of barytes. Then calculate the percentage of sulphur in the barytes by the factor 0.1372.

15. TOTAL SULPHUR.—Place 0.5 gram of rubber in a porcelain crucible of about 100 cc. capacity. Add 20 cc. of the nitric acid-bromine mixture (par. 6.), and cover the crucible with a watch glass. Heat very carefully for half an hour to an hour, remove the cover, rinsing it with a little distilled water, and evaporate to dryness. Add 5 grams of fusion mixture (par. 7) and 3 to 4 cc. of distilled water. Digest for a few minutes, and then spread the mixture halfway up the side of the crucible to facilitate drying. Dry on a steam bath or hot plate. Fuse the mixture, using a sulphur-free flame, until all the organic matter has been destroyed and the melt is quite soft. Allow to cool, place the crucible in a 600-cc. beaker, and cover with distilled water. Digest 3 or 4 hours on the steam bath. Filter into an 800-cc. beaker, washing thoroughly with hot water. The total volume should be about 500 cc. Add 7 to 8 cc. conc. hydrochloric acid to the filtrate, and heat on the steam bath. Test the solution for acidity with congo paper, add 10 cc. 10 per cent. barium chloride solution, and allow to stand overnight. Filter off the barium sulphate as before. Calculate to percentage of sulphur present.

16. CALCULATIONS.—

a. Subtract the "free sulphur" from the "acetone extract, uncorrected," and report the difference as "acetone extract corrected."

b. Subtract the sulphur in the ash from the ash as determined in par. 12, and report "ash, sulphur-free."

c. Subtract from the total sulphur determined according to par. 15, the percentage of sulphur present as barytes, if the latter determination has been made (see par. 14), and report the difference as "total sulphur, corrected." Then add the sulphur so deducted to the ash, in this case reporting the latter simply as "ash, corrected." In other words, only the sulphur other than that in barytes will be deducted from the ash when the total sulphur is corrected for barytes.

d. Subtract from 100 per cent. the sum of the acetone extract, corrected, total sulphur (corrected or not as the case may be), and ash (sulphur-free, or corrected for sulphur other than barytes) and call the remainder "rubber by difference."

e. Divide the acetone extract, corrected, by the sum of the acetone extract, corrected, and the rubber by difference, and call the result, "ratio, acetone-extract rubber." It will be simpler to express the results in percentages. When new rubber only is used this will give the percentage of acetone-soluble matter in the rubber.

17. SPECIFIC GRAVITY.—Make this determination in a pycnometer, using about 5 grams of rubber cut into small strips, taking care to avoid having air bubbles adhering to the rubber. Do not use a ground sample for this determination, since it is intended to determine the specific gravity of the compound as a whole. Aside from the difficulty of completely removing air bubbles, the specific gravity of a sample which is at all porous will be, after grinding, higher than when this is determined on strips. Calculate the specific gravity on the basis of water at 15° C. as 1.00.

18. ALCOHOLIC POTASH.—Fire hose, tested according to the National Board of Fire Underwriters' specifications, calls for an alcoholic-potash extraction. It is performed on the dried rubber remaining after the acetone extraction. The complete method will be given under par. 28.

II—INSULATION, 30 PER CENT. PARA.

19. GENERAL.—The tests to be made on high-grade insulation compounds are: Acetone extract, unsaponifiable matter, waxy hydrocarbons, free sulphur, ash, and total sulphur, and sometimes alcoholic potash and chloroform extracts.

20. ACETONE EXTRACT.—Determine as under par. 10.

21. UNSAPONIFIABLE MATTER.—Add to the acetone extract from par. 20, 50 cc. normal alcoholic potash (par. 5), heat on steam bath under reflux condenser for two hours; remove condenser and evaporate to dryness. Transfer to separatory funnel, using about 100 cc. water; add 25 cc. ether, and shake. Allow the two layers to separate thoroughly, then draw off the water layer. Continue the extraction of the water layer with fresh portions of ether until the ether will no longer remove any unsaponifiable matter; unite the ethereal layers, and wash with distilled water, adding the first wash water to the extracted aqueous layer. This aqueous solution is reserved for the free-sulphur determination (par. 23), Transfer the ether to a tared Erlenmeyer flask, distill off the ether, dry at 90 to 95° C.; cool and weigh.

22. WAXY HYDROCARBONS.—To the unsaponifiable matter from par. 21, add 50 cc. absolute alcohol, and heat on the steam bath for one-half hour. Place the flask in a mixture of ice and salt, and let stand for one hour. Filter off the separated waxy hydrocarbons, using S. & S. 589 blue-ribbon filter paper, and applying a gentle suction. Wash with alcohol which has been cooled in an ice-salt mixture. The funnel should be surrounded by a freezing mixture, in order that the temperature may not rise during filtration. Dissolve the precipitate from the filter paper with hot chloroform, catching the solution in a weighed 100 to 150 cc. beaker. Wash the flask with hot chloroform and add to the same beaker, in order to include any insoluble matter adhering to the walls of the flask. Evaporate off the solvent, dry the residue at 90 to 95° C., cool and weigh.

23. FREE SULPHUR.—Transfer the water layer from par. 21 to a 250-cc. beaker, and heat on the steam bath until the ether has been removed. Add 25 cc. bromine water, heat one hour, add 5 cc. conc. hydrochloric acid, and heat until the excess of bromine has been driven off. (Test for acidity with congo paper; the amount of acid specified is sufficient if instructions are followed exactly, and a large excess of acid is to be avoided.) Filter into a 250-cc. beaker, add 10 cc. 10 per cent. barium chloride solution, and finish the determination as under par. 11.

24. ASH.—Proceed as under pars. 12 and 13.

25. TOTAL SULPHUR.—Proceed as under par. 15. There will be no correction for barytes.

26. CALCULATIONS.—

a. Subtract the sum of the free sulphur and waxy hydrocarbons from the acetone extract, uncorrected, and report the difference as "acetone extract, corrected."

b. Subtract from 100 per cent. the sum of the acetone extract, corrected, waxy hydrocarbons, ash sulphur free, and total sulphur, and report the result as "rubber by difference."

c. Divide the acetone extract, corrected, by the sum of the acetone extract, corrected, and the rubber by difference, and report the result under "ratio, acetone extract rubber," as under par. 16e.

27. CHLOROFORM EXTRACT.—Without removing the acetone from the rubber from par. 20, extract with chloroform for four hours. Evaporate off the solvent in a weighed flask or beaker, dry at 90 to 95° C., cool and weigh. Reserve the rubber for the alcoholic potash determination.

28. ALCOHOLIC POTASH EXTRACT.—Dry the rubber at about 50 to 60° C., transfer to a 200-cc. Erlenmeyer flask, add 50 cc. alcoholic potash solution, and heat under a reflux condenser for four hours. Filter through a folded filter into a 250-cc. beaker, washing with 50 cc. of 95 per cent. alcohol, and then 50 cc. of boiling water. Evaporate the filtrate to dryness. Transfer the residue to a separatory funnel, using about 75 cc. of distilled water. Add a few drops of methyl orange, and acidify the solution with 10 per cent. hydrochloric acid. Extract with four portions of ether, 25 cc. each, unless the fourth portion should be colored, when the extraction should be continued until no further quantity can be extracted. Unite the ether fractions, wash thoroughly with distilled water, and evaporate the ether in a weighed beaker. Dry at 90 to 95° C.; cool and weigh.

What the Rubber Chemists Are Doing.

THE PRODUCTION OF ISOPRENE FROM COMMERCIAL TURPENTINE.

THE practical basis for all synthetic rubber is the production of isoprene, and if this can be accomplished in any practical and cheap way the production of a synthetic rubber on a competitive basis with the plantation varieties would be not only possible but probable.

Therefore any method of making isoprene from cheap raw materials will always be of importance to the rubber industry.

The United States is the world's greatest producer of turpentine, and this oil has been used before to some extent as a raw material for the production of isoprene, but the results have not been in all cases satisfactory.

Some experimental work on turpentine and other pine oils has been done at the University of North Carolina by Chas. H. Herty and J. O. Graham, which has recently appeared in print in the "Journal of Industrial and Engineering Chemistry," from which we quote an abstract: "In connection with studies of rubber made by polymerization of isoprene Harries and Gottlob (Ann. vol. 383, p. 228) described a method for the preparation of isoprene from spirits of turpentine by means of the 'isoprene lamp.' In this method the spirits of turpentine is boiled in a flask just below the neck of which is suspended an electrically heated platinum wire coiled somewhat like the filament of a tantalum electric light."

The vapors are partly decomposed as they pass upward across the heated wire. The flask is attached to an upright condenser maintained at a temperature of 50 deg. C. for condensing the unchanged (and polymerized) vapors of the turpentine. Beyond this is an inclined condenser kept cool and a receiver surrounded by a freezing mixture. Redistillation of the crude product from the receiver gives the isoprene distilling between 35 and 37 deg. C.

Harries and Gottlob obtained only a yield of 1 per cent. from commercial pinene or American turpentine as compared with 30 to 50 per cent. from commercial limonene. They therefore concluded that the production of isoprene from turpentine was due solely to the presence of small quantities of limonine.

Professors Herty and Graham, in view of the interest in their section of the country in the use of turpentine, have experimented not only on the production of isoprene from the commercial turpentine of that section, but also have experimented with the volatile oil of *Pinus Serontina*, or pond pine, and also with refined spruce turpentine.

Using the Gottlob and Harries apparatus, and heating the flask in a bath of cottonseed oil, a current of 2.25 amps. maintained a red glow on the wires which were wound around a pipe-stem triangular prism.

The isoprene produced was redistilled through a Hempel column, and the pure product, distilling between 36 and 37 deg. C., was taken as isoprene. Here is the result of two of their experiments:

First Experiment—200 c. c. of turpentine was boiled in the isoprene lamp until no more volatile bodies came over; and on purifying the distillate it was found that there was a yield of 18.5 per cent. of crude oil and 5.50 per cent. isoprene. The residue in the flask was 103 c. c. Thus 48 per cent. distilled over producing 18.5 per cent. distillate, showing 61.5 per cent. of distillate decomposed into incondensible gases, producing 38.5 per cent. light oil, and leaving a final residue of 52 per cent. more or less of polymerized oil. At present market prices this would make the material cost of isoprene $1.13, allowing nothing for by-products or cost of making.

Even with a theoretical yield of rubber of first quality this would not be a practical process, but it is much more practical than many others which have been exploited, and it points the way for improvements which may give a yield that will bring it within commercial possibilities.

Second Experiment—Commercial turpentine was fractionally distilled, and the first portion was taken off between 155 and 156 deg. C., which would contain most of the pinene. This gave a yield of 8 per cent. isoprene. This gives a material cost of 78.5 cents per pound, which is approaching commercial limits. The higher boiling-point residues from this distilled turpentine gave practically no isoprene, so it is concluded that the isoprene comes from the pinene in the turpentine.

With the oil from pond pine, which is rich in limonene, a yield of 12 per cent. isoprene was obtained.

It appears that the oil of pond pine is an oleo resin, and that it was distilled in a vacuum to produce that portion which contained the most limonene. Owing to the expense of such an operation it would make the cost greater if isoprene were produced from this substance than if produced from the distilled turpentine of the second experiment. This third experiment is, therefore, of scientific and theoretical value only.

Pine oil was also experimented on in a fourth experiment. This produced 4 per cent. of isoprene.

Pine oil is produced by the distillation of stumps or light wood from the yellow pine tree of the south, and this industry has assumed some importance of late years so that this pine oil appears on the market as a regular article of commerce. It is an oil with a specific gravity of .9403, and has a higher boiling point than turpentine, and is sold at a lower price. There is not usually enough difference in price, however, to balance the disadvantages of the smaller yield as compared with turpentine. In producing this 4 per cent. only 37.5 per cent. of the oil was distilled over, the balance remaining as a residue in the still.

The last experiment was made on spruce pine turpentine, which was produced as a distillate from the wood in a digester used for making soda pulp. This yielded practically no isoprene. The oil boiled between 171 and 174 deg. C.

From the above work it would seem that it is only necessary to get better conditions under which a greater yield of isoprene can be obtained from distilled turpentine than were gotten in these experiments to produce isoprene, and in turn synthetic rubber on a competitive basis with the natural product.

We note the specification of British patent No. 13,825, granted to C. K. F. L. Gross, of Bevön, Soon, Norway, for the manufacture of isoprene by treating the vapors of turpentine oil with one or more metallic oxides at temperatures below 700, copper oxide being instanced as suitable. The same inventor proposes to manufacture synthetic caoutchouc, according to British patent No. 13,826, by heating isoprene trioxymethylene as a polymerizing agent.

ANOTHER ACCELERATOR.

Another accelerator has been put on the British market similar to those described in the September issue of this journal in the article entiled "The Influence of Nitrogen Compounds on the Vulcanization of Rubber." This accelerator, which is called "Accelerene," is said to be an invention of an English chemist to whom protection has been granted. It is in the form of a green powder which is added to the mixing in the proportion of about one-half per cent., and which thereby reduces the time of vulcanization to about one-third that required in the ordinary way. Larger quantities reduce the time still further. It is claimed that the use of "accelerene" makes the product superior

in strength to that vulcanized in the ordinary way, and it is assumed that the shorter heating diminishes the amount of depolymerization, while effecting a more complete combination between the rubber and the sulphur. It is claimed that 100 parts of Pará and 10 parts of sulphur may be fully vulcanized by heating for 25 minutes at 40 pounds in the presence of one-half per cent. of "accelerene," while with 40 parts of sulphur a hard vulcanite is obtained by curing for two hours at 45 pounds. Its use is said also entirely to prevent "blooming" or "sulphuring."

Attention has recently been called in these pages to the use of vanadium oxide and tungstic acid as accelerators.

A POSSIBLE NEW RUBBER CEMENT.

VULCANIZATION OF RUBBER SOLUTIONS BY THE ULTRA-VIOLET RAYS.

M. HEILBRONNER read a paper before the International Rubber Conference entitled: "The Study of Rubber Solutions Vulcanized by the Ultra-Violet Rays." This is probably a continuation of the works of Heilbronner and Bernstein, published in the Compt. Rend. May 11, Volume 138, 1914, page 1343, and abstracted in the Chem. Zentr., Volume 5, 18, 1914, No. 4, page 326, and Koll. Zeit, Volume 12, 1913, page 4, where they had shown that rubber combines with sulphur in a solution under the influence of ultra-violet rays presenting a remarkably staple gel. By evaporating the solvent a pellicle of vulcanized rubber was produced which was insoluble in solvents from which it had been evaporated. They also there stated that the ultra-microscopic method shows great quantities of small particles, but there must be many more such particles which are invisible. Dr. Heilbronner in his address said that Victor Henri in 1909-1910 was the first to expose rubber to the ultra-violet rays, carrying out vulcanization with films of solutions of rubber. Attention might be called to French patent No. 460,780, issued July 26, 1913, but which under the international conventions has the date of July 26, 1912, in which the vulcanization of rubber solutions by ultra-violet rays is claimed, and it is stated that 3 per cent. plantation rubber and sulphur in benzine exposed in thin layers vulcanize rapidly, sulphur to the extent of from 1½ to 2½ per cent. combining with the rubber.

Elaborate diagrams were presented by M. Heilbronner regarding the results obtained by various experiments. It appears that it is not desirable to use either flowers of sulphur or stick sulphur, both being to a great extent insoluble, but crystals of sulphur should be used. The most interesting thing is the suggestion that these solutions of rubber so vulcanized may have industrial application. They are said to be suitable for all kinds of cementing or rubberizing operations, and are capable of resisting all mechanical strains, as well as the action of heat. They can be used particularly for joining and rubberizing leather, and consequently will be valuable in the shoe industry.

Lastly, the repairs of all rubber goods, tires, inner tubes, etc., can be readily carried out by means of vulcanized solutions.

While a few years ago it would have been considered fantastic to suggest the practical use of rubber vulcanized by ultra-violet rays, recent progress has been such that by the use of a Peter Cooper Hewett mercury light produced in a quartz tube, the ultra-violet rays pass through with such ease that they have been suggested for many purposes, such as sterilization of water, and it is possible that these solutions of vulcanized rubber may become of considerable technical importance.

By using vulcanized solutions of an altogether different concentration (½ to 1 per cent) a positive absorption of the solution is obtained, and the two pieces are no longer separated by a layer of rubber; they are in immediate contact and penetrate one into the other. By using these vulcanized solutions one obtains not an ordinary joint, but a true autogenous rubber welding.

Dr. M. G. Bernstein also read a paper entitled "The Vulcanization of Rubber by Ultra-Violet Rays." He found that a rubber solution mixed with sulphur and exposed to the action of the ultra-violet rays thickens considerably, and is transformed into a gelatinous mass; furthermore, vulcanization takes place and sulphur enters into the combination.

British Patent No. 17,195 of 1914 has been issued to G. Bernstein, and is for a process of vulcanizing a rubber solution containing 6 per cent of rubber, with 10 per cent of the rubber weight of sulphur dissolved in benzene by spreading, for example, on a moving belt a layer of about ½ m.m. thickness, and exposing it to the ultra-violet rays from a quartz tube for 45 seconds.

This would appear to be rather a difficult thing to do, for under the heat of the rays the solvent would evaporate from this thin film. It appears that if this solution of rubber, vulcanized in this way, is once dried that it cannot be brought into solution again, and accordingly cannot be used as a cement.

RECENT CHEMICAL PATENTS.

Patent for process for treating rubber, issued to Staunton Gray, Muskegon, Mich. U. S. Patent No. 1,115,031. This seems to be a process for producing rubber sponge or foam. The compound is mixed with a light hydrocarbon solvent and brought to a stiff solution. Then it is submitted to a vacuum to make it spongy, when the vulcanizing agent is admitted. (Evidently cold vulcanization is intended.) The vulcanizing agent is then neutralized. The essential idea is to produce a sponge by the vaporizing of the solvent under the vacuum, then to vulcanize cold in this state. It does not appear how the vulcanizing agent is to saturate the compound without destroying the vacuum, in which case the solvent would condense and destroy the sponge effect before the vulcanizing liquid reached it.

U. S. Patent No. 1,112,853 is for producing zinc oxide, assigned to the New Jersey Zinc Co.

THE CREOSOTE CURE FOR LATEX.

British Patent No. 13,438, of 1913, has been issued to Cleland Davidson, for a process of coagulating latex. In this patent phenol, cresylic acid or the higher tar acids are neutralized with caustic soda, and to this aqueous solution is added liver of sulphur or any other polysulphide or sulphide of potash, or soda and formaldehyde solution may then be added. A small proportion of this solution is added to the latex. The essential thing is the creosote and alkali. The other materials may be omitted. After this alkali treatment an acid is used for coagulation. The object of the treatment seems to be to cause the caoutchouc in the course of the coagulation to become homogeneously and intimately impregnated by, or incorporated with, a preservative substance. Perhaps this creosote treatment might have the same influence, to some extent, as the creosoting accomplished in smoking Pará by the Brazilian methods.

U. S. patent No. 1,098,858, granted June 2, 1914, to Franz Webel, who assigns to the Badische Co., claims the production of chlorine derivatives by reacting with chlorine on trymethyl ethylene in a vacuum. This is part of the operation of producing rubber from petroleum oils, which method has the great advantage of having a plentiful and cheap supply of raw materials.

EXPERIMENTS IN RUBBER DYEING.

Dr. Rudolph Ditmar, in "Gummi Zeitung," October 23, 1914, p. 85, has a very elaborated article describing a large number of dyes suitable for rubber dyeing and giving the results of many experiments in their use. Attention was called in the November issue of THE INDIA RUBBER WORLD to the United States patents Nos. 1,113,614 and 1,113,759, on this system of dyeing, with comments on each.

Rubber Solvents.

WHILE the larger quantity of rubber is made into manufactured products without having been brought into solution, yet there are so many uses for rubber in solution that the matter of solvents becomes of great importance. Rubber being a hydrocarbon is soluble in the usual hydrocarbon solvents. These are usually those not soluble in water and of an oily nature. A number of the more usual solvents will be described in the following paragraphs, beginning with those derived from petroleum.

SOLVENTS FROM PETROLEUM.

The petroleum oils are by far the cheapest oils in commerce, and they are solvents of rubber and are the most extensively used of any class for that purpose. In defining petroleum oils it is hard to make definite distinctions, for every oil is a mixture of many separate chemical substances, and the names used to designate them in the trade and the tests used are indefinite and the products of no two manufacturers agree in name or test.

Petroleum oils consist in the main of hydrocarbons of several series, and a large number of each series is found in each kind as it is taken from the ground.

The first oils obtained from Pennsylvania and West Virginia consisted of oils of the paraffine series exclusively having the general formula, $C_nH_{2n}2$. This series begins with marsh gas with one carbon atom and goes up to the paraffine waxes with many carbon atoms in each molecule, but each compound has the same ratio of carbon and hydrogen as pointed out above.

When this oil is distilled there first passes off a little marsh gas which is dissolved in the oil, and following this is a series of products up to pentane, which boils at 36 degs. C., which are mostly lost, though products are sometimes made which will only remain liquid under pressure and will rapidly evaporate in the air. For example, there is a product known as cymogene which boils at the temperature of melting ice and has a specific gravity of 110 Be., and the next higher product is known as rhigolene, which boils at about 65 degs. F., or ordinary temperature, and has a specific gravity of 100 Be. Sometimes a product known as petroleum ether, boiling between these points, say about 50 degs. C. is made.

The next product obtained by distillation of Pennsylvania oil is petroleum ether of 85 degs. Be., or gas machine gasoline, which is very scarce now. It begins to boil at about 50 degs. C. and contains some that boils at 120 degs. C. This is sometimes called benzine but must not be confused with the coal tar benzol.

Then there is a series of gasolines of different gravities and boiling points. It was customary to use gasoline of 76 degs. Be., but this product is now almost unobtainable, and that of 66 Be., with a boiling point ranging up to 140 degs. C., is largely used. After these products come the kerosenes, or burning oils, which are not volatile enough to be used for solvents which have to be later evaporated.

The petroleum trade has clung to the use of the Baume hydrometer as a standard for grading oils, and usually no other characteristic of the oil than its Be. gravity is used in the trade. While all the oil used was of the paraffine series, the Be. gravity was an indication of its relative volatility. This is now of no value when other hydrocarbons are present.

When the oil of Pennsylvania became exhausted the oils of Ohio assumed great importance, and these were found to differ in many respects. While the oil of Pennsylvania was of a dark greenish-red of from 49 to 34 Be., it was quite mobile and rather transparent, and had no impurities, such as sulphur or other objectionable matter. The Ohio oils were found to contain large quantities of sulphur and required special treatment, and there were in them other hydrocarbons than the paraffines. Now these other hydrocarbons which correspond in boiling point with the paraffines have different specific gravities and are usually heavier, so that a gasoline or naphtha from them of a heavier gravity, say 70 Be., might have as low an average boiling point as one from Pennsylvania oil of 76 Be. As the products of the fields of Illinois, Texas, California, Wyoming and Oklahoma came into the market in turn, it was found that these oils consisted largely of other series of hydrocarbons and that in many cases they contained an asphalt base instead of a paraffine base. Many also contained much sulphur and some contained little or no gasoline or naphtha.

These oils from the western part of the United States contain large amounts of oils of the olefine series and some of the acetylene or aromatic series. The latter, while having a different gravity from the paraffine series when of the same boiling point, are as good for rubber solvents as the paraffine hydrocarbons, and indeed often better.

In purchasing petroleum naphthas, therefore, at the present time it is not sufficient to ask for a naphtha of a certain gravity, but it must be examined and tested as to its boiling point first. If the oil begins to distil too low it is rather dangerous, as it will be more inflammable; that is, the vapors given off at ordinary temperatures will ignite easily and will carry a long way from their source and will explode if they come into contact with a light or flame. If there is much of a residue which distils only at a high temperature, the solvent will be too slow in drying and the rubber dissolved in it may remain tacky. The naphthas should also be tested for their dissolving power, as it may vary widely according to the hydrocarbon series present.

Rubber manufacturers have been confronted for a number of years with constantly rising prices for naphthas, and a constantly poorer grade has been received. This situation had no connection with conditions in the rubber trade, but was due to the enormous increase in demand for gasolines for motor vehicles.

The demand created the supply, for it stimulated chemical experiment, and methods have been invented whereby the heavy oils can be "cracked" by distillation under pressure to produce light oils or gasoline, and this process is used on a very large scale. Another influence that has lowered the price of gasoline has been the discovery of oil in the "Cushing Pool" in Oklahoma, where a well was drilled a short time ago that flowed 5,000 barrels daily, which was allowed to go to waste for over a week. This and other previous like samples of criminal negligence in wasting nature's lavish resources have compelled the State of Oklahoma to make an attempt to regulate the flow and waste of oil. Gasolines have recently dropped from about 18 cents to 13 cents and even as low as 10 cents per gallon, and disturbed European conditions will lower them still further, and consumers should now insist on being furnished a suitable naphtha.

CARBON BI-SULPHIDE.

This excellent rubber solvent is a chemical prepared by the direct combination of carbon and sulphur under the influence of high heat, and in America almost the entire amount is made by heating by electrical means. Its solvent powers for rubber are great, and its great volatility makes it a most rapid dryer, but it also makes it a most explosive compound. When mixed with air and heated to 150 degs. C. it will explode, and cases are known where it exploded by the friction of pouring it out of a narrow glass tube. It must, therefore, be handled with great care to prevent explosions. Its boiling point is 46 degs. C. and its gravity is 1.29. It therefore weighs 10¾ pounds per gallon.

TURPENTINE AND PINE OIL.

Turpentine is not much used as a solvent because of late years it has been high-priced. But still more recently very low prices have been seen in this trade, and the outlook is for low prices

for a long time. It is, therefore, worth while considering these as solvents—particularly what are known as "Wood Turpentines" made from the dead wood. These usually have a very disagreeable odor, and this is fatal to their use when they appear in the finished goods like paints and varnishes, but where they are removed their odor can be tolerated in the workrooms with proper mechanical ventilation. Pine oil is also made from wood at the same time as turpentine, and is a less volatile compound. Both of these oils will dissolve rubber better than petroleum naphthas and as well as coal tar products, and the volatility of turpentine is just right for many purposes.

ETHER.

This is an excellent solvent, but nearly as volatile and dangerous as carbon bi-sulphide. It has only a faint, pleasant odor. It is rather expensive, selling at 18 cents per pound, but as it is made from denatured alcohol, its price may be reduced in the future.

THE NON-INFLAMMABLE SOLVENTS.

There is a large number of non-inflammable rubber solvents which are in nearly all cases compounds of chlorine with the hydrocarbons. Among them may be mentioned: Carbon tetrachloride, chloroform, di-chlor-methane, tri-chlor ethane and tetrachlor-ethane. The chlor-ethylenes have also come on the market. These are as follows: Di-chlorethylene, boiling point 55 C.; tri-chlorethylene, boiling point 88 C., or 190 F.; tetra-chlorethylene, boiling point, 121 C., or 249 F., and specific gravity of 1.60. All the above are made in Europe and were until recently sold at about 7 cents per pound. The last one mentioned is, however, made as a by-product in the United States when making carbon tetra-chloride.

CARBON TETRA-CHLORIDE.

This is the most available non-inflammable solvent, the price recently having been 6.5 cents per pound. It is now much higher, but as it is made in this country, it will probably soon be again available. This solvent is used as a fire extinguisher, and with 60 per cent. tetra-chloride and 40 per cent. naphtha the mixed solvent will not explode or burn.

Other uninflammable solvents which may soon come into use are "Dutch liquid," or ethyl chloride, $C_2H_4Cl_2$, with a specific gravity of 1.25 and boiling point of 84 degs C., and propylene chloride, $C_3H_6Cl_2$, the specific gravity of which is 1.165 and the boiling point of which is 97 degs. C. Their manufacture has been begun in this country.

Were it not for the price at which the chlorinated compounds are held, these would be universally used on account of the lessened risk in using them, compared with the hydrocarbons themselves, but they will never, perhaps, be brought down to a comparative price. When, however, the solvents can be in large part recovered, as is sometimes possible, then the additional price for the uninflammable solvents will not prohibit their use, particularly in those places where, as in a large city or in a large factory, any fire would endanger a very large amount of property.

OTHER SOLVENTS.

There are other solvents of rubber among the essential oils and balsams and oleo resins. On account of the price, however, these are seldom used, though some were formerly used in rubber mixings to make them adhesive; for example, Canada Balsam and Oregon Balsam of fir and Venice turpentine. These are all exudations of trees of the pine family.

Of the basic chemical bodies which are oils nitro-benzol may be mentioned. It has been used as a solvent for vulcanized rubber in analysis, though C. O. Weber preferred the nitro-toluol. Pyridine is also a basic body which will dissolve rubber, but Kenneth MacKenzie pointed out (Journal of Industrial and Engineering Chemistry, 1909, p. 361) that pyridine is liable to be contaminated by the hydrate which boils at 94.5 degrees C. which does not dissolve rubber, but the pure pyridine which boils at 115 degrees C. with a specific gravity of .98 will dissolve crude rubber. C. O. Weber uses pyridine to separate asphalts, tars, etc., from the vulcanized rubber in analytical work. It might be a good accelerator, but its smell is almost unendurable.

Sulphur chloride, though not strictly a rubber solvent, is used for the cold cure. It has been described in Pearson's "Crude Rubber and Compounding Ingredients" and is familiar to all in the rubber trade.

In general those liquids which dissolve in water and not in oils are not solvents of rubber, but some of them are used for various purposes in the rubber industry. Methyl or wood alcohol will not dissolve rubber, but will dissolve resins to some extent. Ethyl or grain alcohol will dissolve most rubber resins better than wood alcohol, though the latter will dissolve shellac better, and most varnish gums can be dissolved better in these alcohols, if not raw, than after heating.

The higher alcohols, such as fusel oil, together with their esters such as amyl-acetate, will dissolve rubber quite perceptibly, but they are of no importance in the rubber industry though of great importance in the celluloid and like industries. Amyl-acetate is almost necessary in all nitrocellulose solutions to get a proper protective coating which is of the proper glassy consistency. Acetone is a better rubber resin solvent than the alcohols, but methyl and ethylacetates are still better solvents, in fact the best which will not dissolve the rubber at the same time. Many rubber solvents have not been mentioned as they are rather rare chemicals or oils of such high price that they are of no practical interest.

COAL TAR PRODUCTS FOR THE RUBBER TRADE.

THE ramifications of the rubber trade call for a wide variety of coal tar products. It might be well to consider the list of materials that are demanded by the manufacturers of various rubber goods:

BENZOL, which boils at the lowest point of all the coal tar distillates, is made in five grades.

BENZOL PURE is made water-white and refined so that 100 per cent. of it will distil within a 2-deg. C. range of the boiling point, 82 degs. C., and has a gravity of approximately .880. This material is crystallizable at freezing temperatures. It carries little in the way of impurities and a very small amount of higher boiling homologues. It is used chiefly in cements where speed of evaporation is required. It is also used as a carrier for sulphur chloride, sometimes alone, and at others mixed 50 per cent. with carbon tetra-chloride. There is a small percentage of sulphur compounds in the way of impurities, and certain sources of crude will yield a small amount of carbon-bisulphide in the resultant benzol. Of late there has been a demand for benzol free from these compounds.

100 PER CENT. BENZOL is water-white and refined to a similar degree as the preceding, except that higher boiling homologues are present in sufficient quantity to elevate the boiling point so that 100 per cent. will distil at 100 degs. C. It is used in about the same way as pure benzol.

90 PER CENT. BENZOL is the grade that is used most by the trade. This material is water-white, of good odor and very strong in solvent power. It is fast in evaporation and will cut rubber, rosin, gum, etc., with considerable speed. This enters into a wide variety of cements, particularly pure Pará. It has been used for "wiping off" in tire building, but as a usual thing the low cost of petroleum products precludes this.

50 PER CENT. BENZOL is similar to the preceding grades, but slower in evaporation because the boiling point is now elevated so that only 50 per cent. will distil at 100 degs. C. It is seldom used in the trade except in a few special cements where a certain drying time is required.

STRAW COLOR BENZOL is a grade of benzol comparable to 90 per cent., except that it is not refined enough to be water-white. It is used where the fact that it is pale yellow in color and rather stronger in odor than the water-white makes no difference. The coal tar solvents are higher in price than the petroleum naphthas, but they have better solvent powers, and in many cases superior evaporative qualities. For these reasons they are employed for many special purposes where the petroleum products are not suitable.

PURE TOLUOL is a water-white distillate boiling within 2 degs. of 110 degs. C. This would have similar properties to all the preceding benzols, but its high comparative cost precludes its use.

COMMERCIAL TOLUOL is water-white, boiling 90 per cent. at 120 degs. C., and of similar solvent power, but still slower evaporation. It is used only in tire doughs and such compounds where slow drying is required.

STRAW-COLORED TOLUOL is similar to commercial toluol except that the process of refining has not removed sufficient impurities to make i twater-white in color. It is used when color and odor make little or no difference.

XYLOL is never used in the pure state by rubber manufacturers.

SOLVENT NAPHTHA is really Commercial Xylol—a refined water-white solvent, sometimes called "160-deg. Benzol" and "Rubber-maker's Naphtha." This is used for cements where slow drying is required. It is strong in solvent power; has a good odor and a fairly high flash point—78 degs. F. It is a similar grade to the coal tar naphtha used so much in England for spreading. It also enters very largely into the varnishes used in coating rubber goods, shoes, boots, etc.

HEAVY NAPHTHA has been used in insulating work and also in the preparation of packing and stuffing compound when used along with asbestos, fillers and other bitumens.

CREOSOTE OILS have been used as preservatives for ducking when they have a small percentage of carbolic acid present. They have been suggested for reclaiming purposes, but it is believed their wide variation in manufacture, due to change in source, would require an expensive treatment to insure uniformity.

CARBOLIC ACID is used somewhat as a preservative for duck and also in reclaiming. This process is now used with considerable success and is covered by patent No. 722,944, March 17, 1903, issued to Joseph Chautard and Henri Kessler, and United States Patent No. 774,727, November 8, 1904, issued to Ludwig T. Petersen. Cresylic Acid, often called "Crude Carbolic Acid," is utilized in a similar way.

REFINED TAR is simply a coal tar that has been distilled sufficiently to remove lighter hydrocarbons and excess of oils. It is added to reclaimed stock and shoddy to impart a kind of oily consistency and tarry odor.

NAPHTHALINE is made in a wide variety of refined crystals. The chief demand by rubber manufacturers is for white flake. This is used as a preservative and also for reclaiming. The process is, however, covered by a patent.

PITCHES, the solid residues of coal tar distillation, are used somewhat in compounding. It is extraordinary that these materials have not found more vogue in the trade, as they are hard, black, binding bitumens that can be easily made hard or soft as required. They are very cheap and easily obtainable. They melt well and will take up a large amount of loading material.

NOTE.—Gravity in coal tar distillates is unimportant as all are in the range of .880 to 1.04 and they do not vary in accordance with boiling point as in case of petroleum.

The Globe Tire & Rubber Co., Inc., has been organized at Philadelphia to take over the tire business of the Meeley Rubber Co., at 660 North Broad street. F. W. Darlington is president of the new concern, J. V. Harrigan and R. J. Skilton retaining their respective offices of vice-president and secretary-treasurer.

A NEW RUBBER AND ASBESTOS COMPOUND.

By John F. Green.

MANY attempts have been made looking to a compound of rubber and asbestos and the writer in pursuing his research of asbestos, both in the chrysotile and amphibole varieties, discovered that in external appearance and in chemical composition they are very much alike, and that the heat-resisting property of both these varieties of asbestos is approximately the same. But because of the condition of the fibre the amphibole is the best resistant to acid. The analysis of asbestos gives as component parts silica magnesia, ferrous oxide, alumina and water, and the difficulty in the past to find greater uses for asbestos lay in the fact that for electrical and other uses the magnesia and ferrous oxide were found to be detrimental. The removal of the magnesia and ferrous oxide, however, gives what has been named "fibrous quartz," and this material has been spun into a thread, inducted into porcelain, made into paper and other uses; and the writer was asked to induct it into rubber—which has been done in all grades of rubber, and as high as 95 per cent. asbestos has been used experimentally.

It was discovered that vulcanization could be had at a lower temperature than that formerly used, that asbestos gave a greater heat resistance to the compound, and as we were inducting a silica with the compound we were getting a very hard material and one that would stand a great amount of hard usage. This fibrous quartz is non-carbonizing, impervious to acid, and is practically indestructible. Compounds made of low grades of rubber have been surprising in their results. No better adulteration can be found than fibrous quartz. Its utility, in addition to the other qualities named, gives this material a unique position in the commercial world.

The compound can be made of different per cents. of both ingredients to suit the requirements, but the compound thus far found best for common use is 75 per cent. fibrous quartz and 25 per cent. rubber.

In using asbestos as heretofore the 40 per cent. of magnesia going into the compound was a detrimental factor, electrically and in other ways, and results were not satisfactory. Besides, there were found more or less grit and sand in fine particles. All these objections are removed by the process employed to get the material known as fibrous quartz.

In all rubber manufactures, especially hard or semi-hard material, the product can be greatly improved by compounding with fibrous quartz, besides reducing the cost of production, and it will enable the product to find more channels commercially. The writer at present is engaged in experiments for a superior rubber for heavy truck tires, and for a compound that will resist acid for washing machines or wringing machines. He is also looking to a time when by these methods vulcanization will be greatly simplified, in fact, attained by friction—as in some of the experiments the compound under consideration was so tough that increased power was put on the machine and a scintillation of frictional vulcanization was observed.

REDUCED COST OF CEYLON RUBBER.

The annual report of the British Colonial office on Ceylon shows exports of rubber as follows: 1910, 1,698 tons; 1911, 3,060 tons; 1912, 6,628 tons, and 1913, 11,325 tons. Nine years ago the exports amounted to only 34 tons. In 1913, the United Kingdom took 55.38 per cent. of the total and the United States 23.89 per cent. The average value in 1912 represented $1.77 per pound and in 1913, 80 cents. The relatively low cost of rubber production in Ceylon is referred to as permitting a satisfactory profit at prices now ruling. Recent railway extension will serve one of the richest rubber districts in Ceylon.

Some Interesting Letters From Our Readers.

TWO TIMELY LETTERS FROM THE FAR EAST.

DUTCH PLANTERS WANT TO SHIP DIRECT TO THE UNITED STATES.

THE following letter has been received from a large rubber house in Rotterdam which distributes the product of a number of rubber estates in the Dutch East Indies. These dealers are very anxious to make an entry into the American rubber market and their letter cannot fail to interest American importers and manufacturers. They write:

The reason why we take the liberty of approaching you is the following:

One of our firm is the manager of some of the best known rubber growing companies in our colonies, the Dutch East Indies. In this way we have the sale of the product of 5 estates in Sumatra and one in Java, and although these estates are still very young we are bringing more and more rubber on the market.

Since the British Government has declared rubber contraband our steamers are discharging their rubber in England or in France, and in order to escape the seizing of our product we will have to hold the rubber back in the Indies, or we will have to ship it to England or the United States.

England offers us the advantage of being near by, but we are considering whether the United States would not offer us a better outlet. There are advantages such as the facts that your country is the largest buyer of rubber, that direct shipment would save freight and insurance premiums, etc.

However, we know the English market, but we know nothing of that in the United States; and we would feel much indebted to you if you could give us some elucidations—if you would tell us whether plantation rubber is sold to the consumers by importers, or agents of English houses, through the medium of brokers, or how. Does there exist such a thing as a rubber market or rubber sale? And what are the expenses, import duty, storage expenses, brokerage, etc?

After England the Dutch people are the largest rubber growers, and we have dozens of companies, which are established here but are working in Java or Sumatra, that are in the same position we are in.

If the war is going to last long, as it most probably will, the Dutch companies will have to do one thing or the other, because, as set forth above, the rubber can no more reach the Rotterdam and the Amsterdam markets.

We have gone so far as to suggest the idea of establishing an office in the United States for joint account of our companies to sell our product there; and we have considered the possibility that the Americans might work hand in hand with us to open a market in your country direct instead of taking the way via England.

We would appreciate it if you would consider the above and give us your opinion.

OUR FAR EAST CORRESPONDENT IN COMMAND OF SCOUTS.

DURING the last two years THE INDIA RUBBER WORLD *has published a number of very interesting articles from its correspondent in Singapore on the general situation in the Far East. A letter has just been received from him which, though brief, is not less interesting than its predecessors. It is written in pencil, on a crowded sheet of paper (the camp stock of stationery being quite limited), from the Cyclist Scouts Outpost on Singapore Island—for our correspondent was one of the first in that section to volunteer for service in the British army. His letter is as follows:*

I have been here in command of a post of cyclist scouts since the war broke out, and have had no time to attend to business—in fact there has been no business to attend to. As I am a relic of the South African War (Strathcona's Horse—Canadians, you know), I was at once put on the first job going here. I volunteered for home at once, but no one is being sent from here yet, on account of climate, etc.

I have not seen THE INDIA RUBBER WORLD for nearly three months, and feel quite out of touch with your end of the game in the present state of affairs.

There is now the chance of a lifetime for American firms to buy rubber direct here in Singapore, and to establish direct relations with the center of production. Rubber was selling here at first (August) at 1*s.* to 1*s.* 6*d.* per pound—prime smoked sheet—but no orders could be obtained from anywhere. Where were your manufacturers? If they had had agents here they would have had the chance of a lifetime to lay in stocks on the ground floor.

I have been trying to persuade several American firms to start in to do business here direct, but they do not yet seem to grasp the definite limits of the local conditions. All rubber is sold here for spot cash, as estates send their rubber down here to obtain immediate money to carry on with, and any market that is established here will be on a direct cash basis—credits must be sent with orders. There is no money, and no credit to be obtained locally.

The Malay peninsula has exported from January 1 to August 31, 28,570 tons of plantation rubber and may be credited with 45,000 tons for the year. Ceylon will do about 15,000 tons, and the rest of the Middle East about 6,000 tons, or so, making a total of some 66,000 tons probable for this year.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR:

We enclose for your inspection part of an issue of "The Waste Trade World," published in London. You will note that the article is copied word for word from your October issue. (The article referred to is the "Review of the Rubber Scrap Market," which filled about two-thirds of a page in THE INDIA RUBBER WORLD.)

Our grievance is that the London paper is not issued and sold exclusively to the trade, but is to be had by any Tom, Dick or Harry who cares to spend one penny.

We, as subscribers to your esteemed journal, also being wholesale merchants, trust this will have your kind attention, as we can assure you that the London paper is far from being popular with all our friends.

E. R. W.

England, October 29, 1914.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR:

In your November number, page 115, you say that complaints have been received that Chinese rubber shoes are not worth as much as American rubber shoes for reclaiming.

There must have been a radical change in the last few years, for when I superintended the output of 4,000 pairs of Chinese shoes a day in Great Britain, this trade, along with the Turkish trade, demanded better stocks than the home trade, and it was understood that what would do for the home trade would not suit the Eastern market.

R. E. HOTCHKISS.

November 10, 1914.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

New Rubber Goods in the Market.

A MACKINTOSH CAPE FOR MEN.

TWO views are here shown of the Hussar cape for men, a style popular in Europe but which has not until quite recently been made in this country. Its introduction here has been well received. It is made either in Mackintosh material or Cravenetted tweed and combines novelty with service and practicability. [The N. Y. Mackintosh Co., Mamaroneck, New York.]

A NEW GARTER FOR MEN.

A new garter for masculine use has recently come on the market that consists of an elastic silk strap to go around the leg, equipped with various fittings that are either made of ivory or of such a good imitation as to be indistinguishable from it. From this fact it gets its name, the "Ivory" garter. Its distinctive feature lies, however, in the method of catching and holding the stocking. There is a tongue, finished with a soft, corrugated rubber tip, that fits into a clasp. When the stocking is laid over this tip and the tongue pushed through the clasp the rubber tip holds the stocking absolutely and at the same time, being soft, avoids any tearing tendency. [Ivory Garter Co., New Orleans, Louisiana.]

AN AMBULATORY SPLINT WITH PNEUMATIC CUSHIONS.

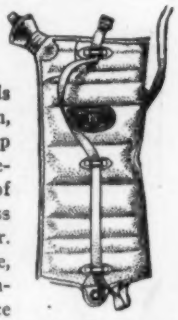
Persons who have never suffered broken or fractured limbs or dislocated joints can scarcely appreciate the discomfort and inconvenience that often arise from these injuries, aside from the suffering they cause. One result of an accident of this nature might be, for instance, the shortening of the limb. To prevent such deformities and to promote as far as possible the comfort of the patient, a new form of splint has been devised, an illustration of which is shown. It is made of light, seamless steel tubes, with pads of webbing and flannel containing air cushions of rubber. These cushions enable the splint to be applied without pain. It is stated that this form of splint allows the patient to move around in bed, to sit up or to walk about at once; that it retains the broken bones in proper position, and permits frequent inspection of the injured member. [F. S. Betz, Hammond, Indiana.]

A MOTORCYCLE AMBULANCE WITH WATERPROOF COVERING.

Not the least interesting of the inventions which the necessities of the present war have brought into being is the ambulance being used in the British army's hospital corps. A side stretcher with a third wheel is attached to the motorcycle. This stretcher is supplied with waterproof coverings to protect the wounded soldiers from the storms, and will accommodate two persons. Hundreds of these outfits are said to be in use, the high speed at which they can be operated being a feature of great advantage.

THE ABFOOT HOT WATER BOTTLE.

The hot water bottle shown in the accompanying illustration is a new type that has just come on the market. It is made of cloth-insertion chocolate colored rubber, and is considerably larger than the ordinary hot water bottle, measuring 18 x 8 inches, and will hold enough water to retain heat for a long period. One important feature of this bottle is the stays situated at regular intervals to prevent bulging and to maintain an even, flat surface. Another is the detachable strap arrangement by which the bottle may be secured to the body if desired. Or, by use of this strap the bottle may be attached across the foot of the bed, to serve as a foot warmer. The stopper is in the corner of the bottle, where it will cause no discomfort or inconvenience to the user, and the heating surface being unusually large, one bottle will ordinarily be found sufficient to provide the necessary warmth. [The Hospital Supply Co., 53-5 Fifth avenue, New York.]



THE "MERMAID" BATH-TUB SYRINGE.

From the illustration it will be noted that the Mermaid syringe is intended for attachment to the faucet of the bath-tub. It is made entirely of rubber, from the soft rubber cup which slips over the faucet and the two and a half yards of red rubber tubing to the patented hard rubber medicating chamber and douche point. [Mermaid Specialty Co., 1416 Broadway, New York.]

THE KANGAROO ARCH SUPPORTER.

This is a scientific appliance for the support of fallen arches and is a distinct innovation in the field of arch supporters, being worn on the outside of the shank of the shoe, under the arch of the foot. The device for attaching it to the shoe is simple and practical. It consists of two clips nailed to the bottom of the shoe and two flanges projecting from the metallic anchors vulcanized into the supporter. When attached it has the appearance of being cemented to the shoe. It can be attached or detached in a moment, permitting one pair of supporters to be used on several pairs of shoes. It is made of rubber, is light, soft, flexible, elastic and yielding, and permits the arch of the foot to rise and fall naturally. [The Dr. Neal Co., Portsmouth, New Hampshire.]

THE "WONPEACE" RING CUSHION.

The B. F. Goodrich Co., of Akron, Ohio, is making a new line of molded ring cushions, under the trade name "Wonpeace." This cushion is chocolate colored, all-rubber, absolutely without seam, has smooth surface and heavily reinforced edges.

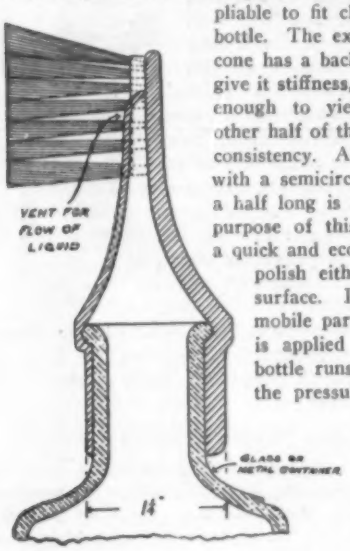
A ROUND BALATA BELT.

Under the trade name "Dickbelt," R. & J. Dick, Limited, of Glasgow, Scotland, and Passaic, New Jersey—the makers of Dick's Original balata, gutta percha and canvas belting—are putting out a new line of round balata belting. This new belt is about three-eighths of an inch in diameter and is suitable for use

on sewing machines, certain kinds of washing machines, motorcycles, in cash conveying systems in stores, on trolley cars for shifting the pole over the car, and for various other purposes.

BRUSH FOR APPLYING LIQUID POLISH.

The accompanying drawing shows the top and neck of a bottle—which may be either of glass or of metal—over which has been drawn a conical piece—or nipple—of rubber sufficiently pliable to fit closely over the top of the bottle. The extended end of this rubber cone has a back of sufficient thickness to give it stiffness, and at the same time thin enough to yield under pressure. The other half of this rubber cone is of softer consistency. A brush of horseshoe shape with a semicircle of bristles an inch and a half long is attached at the end. The purpose of this invention is to provide a quick and economical way of spreading polish either on a metal or leather surface. It may be used for automobile parts or for shoes. When it is applied the liquid polish in the bottle runs down into the cone and the pressure of the bristles on the surface to be polished forces the rubber cone backwards enough to open a small vent in the center of the bristles, through which the liquid feeds. [L. W. Bullard, Cumberland, Maryland.]



UMBILICAL TRUSSES.

Below are shown illustrations of two new umbilical trusses, the first of which is made with a pad of sponge rubber, soft and comfortable to the flesh, and so arranged that it will not slip, also that it may readily be cleansed with soap and water.

The other, known as the "Walco," is made of double width elastic webbing with non-elastic straps in front, fastened to studs upon a polished hard rubber pad. It has soft leather trimmings and connections. Both are in adult size.

THE "OLIVA" SLEEPING BLANKET.

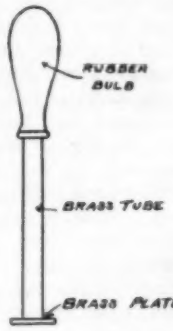
These two cuts illustrate a new style of sleeping bag, which is claimed to possess several advantages over the styles that have hitherto been on the market. One of these advantages is that it

has three thicknesses of material over the wearer, affording ample warmth, while another is that it can be thrown open in a moment, as it is so shaped that it remains in position without the use of restricting fastenings, with the exception of the snap

fastening near the feet. Made of waterproof material, it is offered as especially suitable for use in field hospitals and hospital ships, as well as for those engaged in active service. [Mrs. Oliver, 39 Old Bond street, W., London.]

FOR LIFTING MICROSCOPIC COVER GLASSES.

A contributor to a London pharmaceutical journal describes a device which he employs for lifting the very thin microscopical cover glasses used in his research work. This utensil is shown in the accompanying drawing. It consists of a short brass tube in diameter about equal to a lead pencil, on the lower end of which is a flat brass plate with an opening in the centre, and attached to the upper end of which is a rubber bulb, such as is used on the ordinary medicine dropper or fountain pen filler. To lift one of these delicate glasses it is necessary simply to moisten the surface of the brass plate, press the rubber bulb, then press the plate upon the glass cover. The suction holds it in place. It can be released, of course, by again pressing the bulb.



A WATCH CASE ATOMIZER.

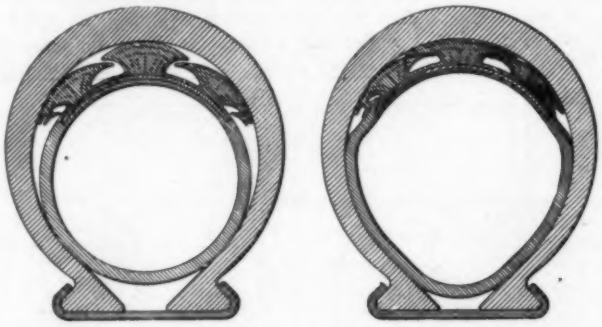
This instrument is a complete and efficient pocket atomizer, suitable for spraying the nose and throat. It is made entirely of hard rubber, in the size and form of a watch case, and can be conveniently carried in the vest pocket, filled and ready for use; thus enabling sufferers from catarrh and similar afflictions to apply antiseptic spray at frequent and regular intervals. It has a screw-on cap, and is easily cleaned; is made in two styles—with fine spray for thin fluids and with coarse spray for thick fluids or oils—and is said to have the approval of the medical profession. [American Hard Rubber Company, 11 Mercer street, New York.]

A SHAMPOO APRON.

Who has not experienced the disagreeable sensation, when indulging in an otherwise invigorating shampoo, of having water trickle down the neck? A rubber apron is now made which will prevent this annoying condition. This apron resembles a child's bib, but it fastens up closely around the neck, having a couple of snap fastenings so that it will fit different necks. It is made in several sizes, from 19 x 22 inches to 27 x 35 inches. [Bailey Rubber Co., Boston.]

A NEW INNER TUBE BY GUSTAVE KUSH.

Mr. Gustave Kush, of New York, the well known manufacturer of mechanical rubber goods, has invented an inner tube which certainly is unique and original. The first of the two accompanying illustrations shows this tube placed in the casing and only sufficiently inflated to hold its natural shape. It will be noticed that at the tread there are three longitudinal ribs, very much wider at the top than at their base. When the inner tube is fully inflated it assumes the shape shown in figure No. 2, where it will be seen that the



ribs overlap and form several chambers in which the air becomes compressed when the tube is inflated. This inner tube weighs about one-third more than the ordinary kind, but it will be possible with this tube to use a casing about 25 per cent. thinner than the usual casing.

It is obvious at a glance that this tube makes the tire much less liable to puncture than the ordinary tube which has the same thickness at all points. In addition to this merit Mr. Kush claims that by reason of the compressed air caught between the ribs and the decreased thickness of casing required the tire becomes more resilient. His further contentions are that there is no pinching or friction between the tube and the casing, and much less liability to over-heating. He believes, further, that with this tube pneumatic tires can be used on heavy trucks in place of solid tires to great advantage and with much economy. [Gustave Kusk, 61 Beekman street, New York.]

THE COATS RESILIENT WHEEL.

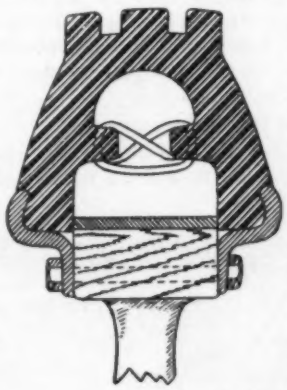
Many tires have been designed with the object of eliminating the pneumatic tube feature and preserving the resiliency, but the Coats wheel preserves the pneumatic cushion effect in a novel manner by distributing the air in six pneumatic bags placed around the hub. As shown in the illustration, each of these air bags is a circular cushion, placed between the hub and the rim. The rings are inflated simultaneously from an air valve near the center of the wheel, and are inter-connected by flexible tubes so that a road shock on one is distributed among the six. The rings are enclosed by cover plates on the sides of the wheel and are thus protected from oil, moisture and light. Should one of the cushions become deflated, the wheel could still be used, or the cushion replaced in a few minutes. Since the cushions do not come in contact with the road, they are not subjected to wear. The rim is made in S. A. E. standard sizes and will take standard solid tires. [American Motor Wheel Co., Crawfordsville, Indiana.]

A PNEUMATIC TUBE WHERE IT CANNOT BE PUNCTURED.

A Louisville company has put a combination wheel and tire on the market of such a character that the tire, while pneumatic, is not subject to puncture, because it is far removed from where any puncture is possible. The wheel has a solid rubber tire. It also has a cushioned hub, consisting of an inner and an outer circle; and between these there is inserted an annular inflated cushion which, as a matter of fact, is a small size pneumatic tire, but, being placed where it is, it is immune from the accidents that befall the pneumatic tire in its usual place around the rim. The accompanying illustration shows the location of this new pneumatic. [Pneumatic Hub-Tire-Wheel Co., Louisville, Kentucky.]

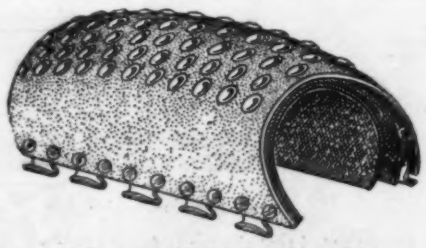
THE SHERRIN-DIAMANT TIRE.

An innovation in the construction of solid rubber tires is presented in the Sherrin-Diamant tire illustrated herewith. From external appearances it seems to be of about the same construction as the average solid tire, although it is said to combine the resiliency of a pneumatic with the advantage of being puncture proof. The inside is hollow and the lower edges set in the rim of the wheel in the ordinary manner. There are two ribs on the inside extending around the tire, and these are laced together by a raw hide thong, which supports the lateral walls but allows sufficient resiliency to take up the road shocks. [The Sherrin-Diamant Tyre Syndicate, 10 Copthall avenue, London, England.]



THE "NO-STRETCH" TIRE BOOT.

A new type of tire boot, known as the K. C. "No-Stretch," has been introduced in the West. This boot is built on a core the exact shape of a tire, in quarter-inch sizes, so as to fit non-skid tires, and in both hook-on and lace-on styles. It is constructed of two inner layers of rubberized tire fabric and an outside layer of leather. The no-stretch feature is the result of the use of the rubberized fabric, which resists the action of water, while the studded leather cover supplies wearing quality. It is guaranteed by the manufacturers to give 2,000 miles service. [Western Tire & Rubber Co., Kansas City, Missouri.]

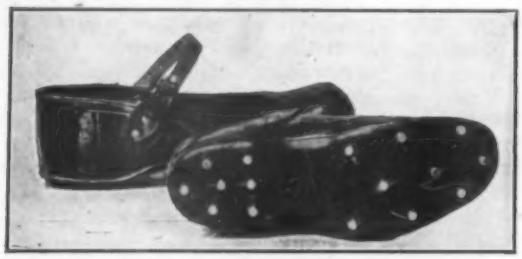


Some New English Rubber Goods.

THE Editor during his recent visit to England ran across a number of rubber articles which have lately come on the English market, but which as yet have not found their way, at least in any considerable quantity, across the water.

RUBBER SHOES FOR GOLFERS.

The accompanying illustration shows a pair of rubber shoes made especially for golfers, for in England and Scotland at least weather is no bar to golfing, and the game is pursued



ENGLISH RUBBERS FOR GOLFERS.

ardently even under dampening conditions. It will be noticed that these rubbers have steel studs in the bottom so as to render them anti-skid on slippery links. Another noticeable feature is the strap going over the instep of the foot, holding the rubbers firmly in place even when one is walking over soggy ground which has a tendency to pull them off. They are worn over any kind of leather shoes.

A RUBBER COVER FOR THE TOOTH BRUSH.

No one on packing his grip after spending a pleasant week-end likes to throw a wet tooth brush in with his collars and other accoutrement which it is desirable to keep dry. This little rubberized case solves the problem. The moist brush is inserted, the end clasped together, and no harm is done to the neighboring articles.

A WATERPROOF TOOTH BRUSH CASE.

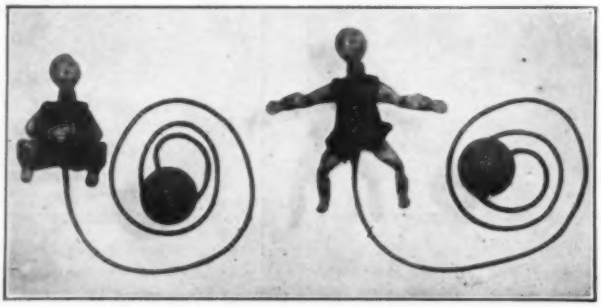
A TEE THAT POINTS THE WAY.

The ordinary tee serves no good purpose except to place the ball on, so as to give it a clean, square blow; but the indicator tee which is here illustrated serves an additional purpose. It has a long pointer which indicates the proper direction for the stroke. It will be noted that the tee is fastened by a staple which is pushed into the ground so as to keep it from flying too far out of place.

THE INDICATOR TEE.

A SWIFT AND UNTIRING SWIMMER.

Some rubber toys are so simple in their mechanism that everybody on seeing them wonders why he did not get the idea himself, but here is one of quite a different color, and on seeing it perform its functions one marvels at the human ingenuity that devised it. It is in the form of a little rubber figure, made hollow and so constructed that when in repose the arms and legs are folded up close together as in the left hand position in the accompanying illustration. To this little hollow figure there is attached, as a sort of caudal appendage, a long but slender rubber tube with a rubber bulb on the end. When the figure is put in the water its specific gravity is such that it floats with

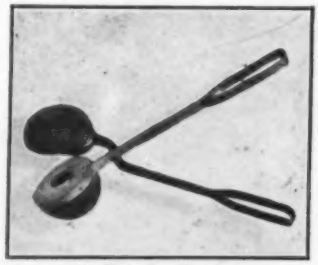


A RUBBER SWIMMER THAT REALLY SWIMS.

the head out of the water and the body submerged. A pressure on the bulb straightens the arms and legs as in the second pose in the illustration, and makes a perfect swimmer's stroke, so that the little figure darts ahead in the water with every pressure. To add to its realism it is clad in the conventional bathing suit. It is a droll device and affords infinite amusement.

A PNEUMATIC NOISE MAKER.

There are a great many people who think that there is too much noise in the world already, but that attitude simply argues advancing years. To the youthful mind there cannot be too much noise, and any addition to the existing sum is ardently welcomed. Here is a halftone cut of an English "Cracker," which is a device for making explosive sounds inexpensively and indefinitely. The two hemispheres shown in the picture are made of soft rubber. The flat surface where the two come together is made of wood or metal with a hole in the center. When a piece of paper is put over this hole and the two sides brought together by closing up the handle, and then either side of the completed sphere is struck against a wall or a table, or any hard substance, the pneumatic pressure breaks the paper with a load explosion.



A RUBBER CRACKER.

A SHILLING GOLF BALL.

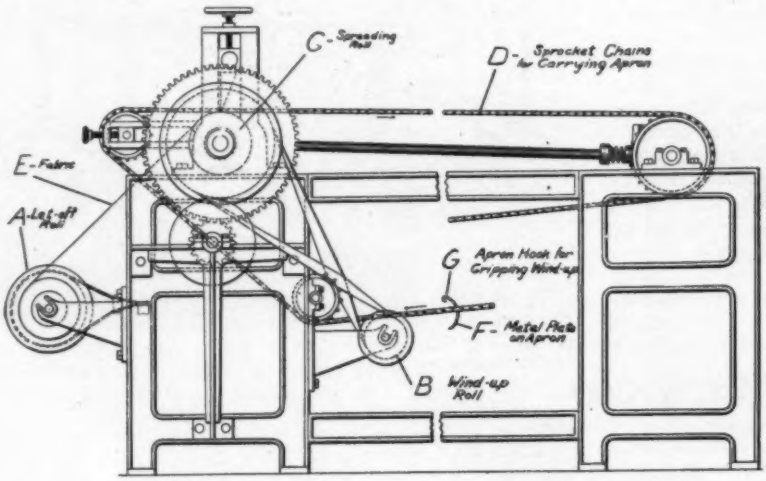
While in England recently the editor picked up a golf ball which is sold there for a shilling and called the "Sunbeam." This was not a re-made, but a new ball. Its cover was white as snow and very hard. The ball was a non-floater and flew well. At first it sounded a bit like the old "gutty," but seemed to loosen up after a little. Under the dissecting knife the interior proved to be a large ball of rubber substitute, wound with rubber tape, the cover being apparently of a celluloid compound.

New Machines and Appliances.

LANDIN'S FABRIC FEED FOR SPREADERS.

THIS is an ordinary spreader equipped with a device for feeding the fabric. This consists of an apron having hooks at one end and a clamping plate at the other, and is run by a pair of sprocket chains, into which the hooks catch.

In the drawing, *A* is the let-off, *B* the wind-up, and *C* the spreading roll, driven in the usual manner. On each side of the spreader is a sprocket chain *D* for engaging the apron to convey it through the machine to the wind-up. The apron is built up in the form of a pad, having two outer layers of canvas and a middle layer of felt. It is as wide as the fabric *E* and long enough to lap once or twice around the wind-up, forming a smooth cushion for the coated fabric. The apron is stretched between the chains and is not shown in the drawing.



LANDIN'S FABRIC FEED FOR SPREADERS.

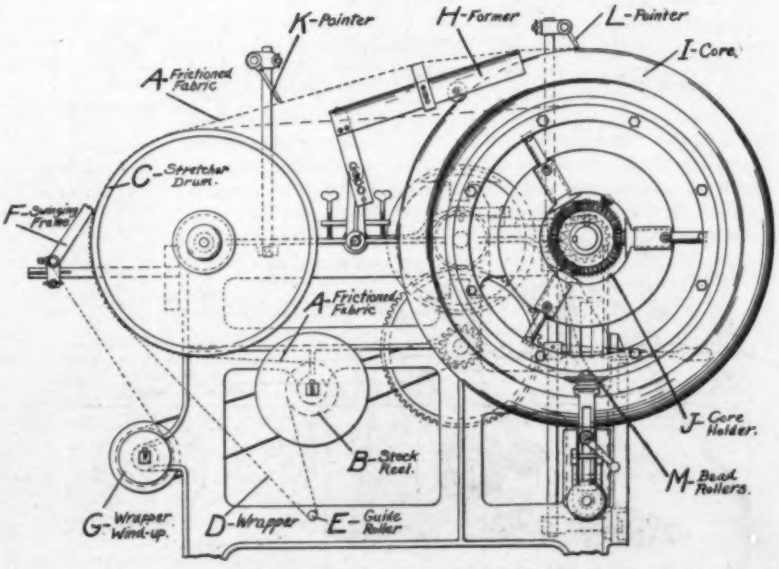
On the rear end of the apron is a narrow metal clamping plate to which the fabric may be quickly and smoothly attached. On its forward end is another metal plate *F*, curved to fit the wind-up roll. On each end of this plate is a hook for attaching the apron to the chains *D*, and in the center is another hook *G* which catches on one of a series of rods in the center of the roll *B* when the apron reaches this point.

The operation is as follows: The forward end of the apron is hooked to the chains and the rear end is clamped to the fabric. The spreading knife is raised and the machine set in motion. When the rear end of the apron has passed the roll *C* the knife is lowered and spreading begins. When the plate *F* reaches the wind-up it is automatically disengaged from the chains; the hook *G* catches one of the rods in the center of the roll *B*; the apron and fabric are then wound up in the usual manner. Invented by C. J. Landin, and assigned to the Clifton Manufacturing Co., Boston.

THE CONVERSE-KRESS TIRE MACHINE.

AMONG the new machines of the month is one for building tire casings. Its salient parts are a tire core and jack, a stretcher drum, a former for shaping the frictioned fabric to the core, and a pair of adjustable bead rollers, all mounted on a frame.

Referring to the drawing, the bias frictioned fabric *A* is passed from the stock reel *B* around the stretcher drum *C*. The muslin wrapper *D* passes from the stock reel under a guide roller *E* but is again brought against the frictioned strip and passes part way around the drum with it, forming a brake to prevent it from being unwound too fast. The wrapper then goes over a swinging frame *F* and is wound up on a reel *G*. From the drum the fabric passes over a former *H* and is attached to the tire core *I*. The core, mounted on the holder *J*, is geared to travel 15 per cent. faster than the drum, to give the fabric strip a uniform stretch. The former *H* is shaped like an inverted *U* and has curved edges which turn up the edges of the strip to shape them for taking the beads. Above the frame are two pointers *K* and *L*, under which the center line of the strip passes, serving as a guide to keep the winding in line. A center line for this purpose may be marked on the strip as it is wound on the stock reel, so that the line will come on the upper surface of the fabric as it is unwound in the process of building up the tire.



THE CONVERSE-KRESS TIRE MACHINE.

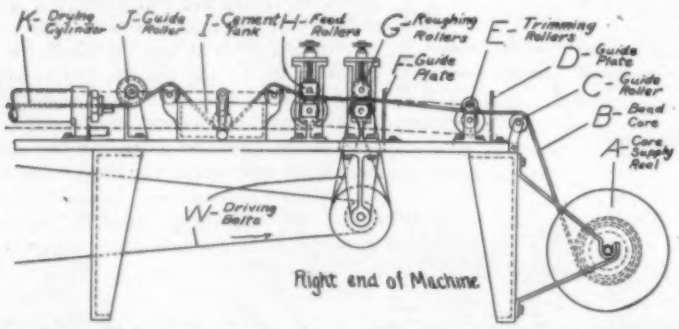
After the required number of plies are laid on the core the beads are applied and rolled into place by the adjustable, concave, horizontal rollers *M*. The machine is patented by F. B. Converse and F. A. Kress, and assigned to The B. F. Goodrich Co., of New York.

THE TYLER-NALL TIRE BEAD MACHINE.

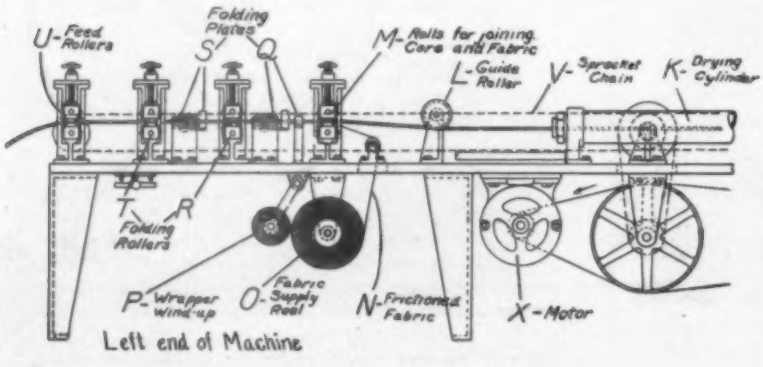
TIRE beads are usually made by hand. That is, the cores are formed by a tubing machine and afterwards covered with frictional fabric by hand. In the accompanying drawing is shown a machine for doing the cementing, covering, etc. It takes the bead core from a supply reel, feeds it through trimming rolls, through a cement tank, and then through a long drying cylinder. The strip of frictioned fabric is then folded longitudinally around it by a series of guide plates and rollers.

In the side elevation shown, the upper drawing is the right end, and the lower drawing the left end of the machine. From the supply reel *A* the core *B* passes over a guide roller *C*, through a guide plate *D*, and between trimming rollers *E*, where the surplus rubber is trimmed away. It then goes through a guide plate *F* and between roughing rolls *G* which prepare it for receiving a coating of cement. The core is passed between feed rollers *H* and through a tank *I* where it receives a coating of cement. From the tank it passes under a guide roller *J* and through a long, steam-jacketed drying cylinder *K*. Here the drying is hastened by forcing compressed air into the cylinder. From the dryer the core passes under a guide roller *L* and between rollers *M*, where it is brought in contact with the center of the upper surface of the strip of frictioned fabric *N* from the supply reel *O*, the muslin wrapper being wound up at *P*.

The core and fabric then pass through folding plates *Q*, rollers *R*, folding plates *S* and rollers *T*, which wrap the strip completely around the core and press it down firmly. The completed tire bead then passes between feed rollers *U* and away from



the machine. The various feed rollers, trimmers and folding rollers are driven through a sprocket chain *V* running the entire length of the machine, and belts *W*, from an electric motor *X*

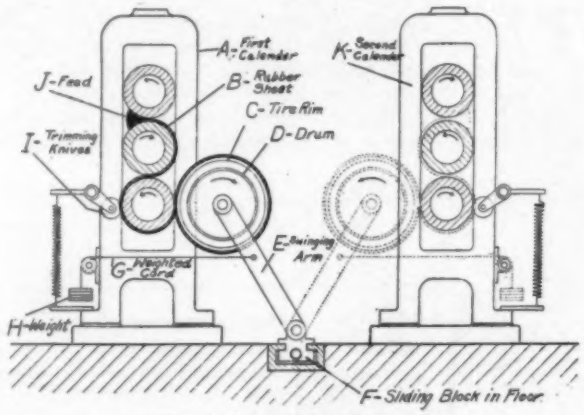


suspended by hangers under the frame. All driven parts are geared to feed the core at the same speed.

This machine is the invention of W. C. Tyler and E. Nall, who have assigned it to The Goodyear Tire & Rubber Co., Akron, Ohio.

GRAY'S SOLID TIRE MACHINE.

BUILDING up solid tires from sheeted rubber direct from one calender is not new. Building from two calenders, however, as illustrated herewith, of different qualities of rubber, is new and interesting, and is described below.



GRAY'S SOLID TIRE MACHINE.

The apparatus begins with a revolving drum holding the rim on which the tire is built. This is mounted on a swinging arm set between two calenders. The rim is pressed first against the lower roll of one calender and then against that of the second, and is built up in plies of two different compounds, sheeted and trimmed into a strip of the required width.

In the drawing, *A* is the first calender, in which the sheet *B* is produced for forming the base of the tire; the feed being at *J*. The rim *C* is mounted on the drum *D*, carried on the swinging arm *E*. The lower end of the arm is pivoted in a block *F* which slides in a groove in the floor. To hold the rim against the lower calender roll with sufficient pressure, a cord *G* carrying weights *H* is attached to the arm *E*. Back of the lower calender roll are two circular cutters *I* for trimming the sheet *B* into a strip of the required width. The machine is operated as follows:

The rim is swung over against the lower roll of the first calendar *A* and is revolved by frictional contact with it, being held in this position by the weighted cord until the base of the tire is built up to the required thickness.

Where another quality of rubber is to be used in the tread, the arm *E* is swung over, bringing the rim with the partly-built tire against the lower roll of a second calender *K*. This is constructed exactly like the first machine, and the tread is built up in the same manner. In case more than two qualities of rubber are to be used, the drum is brought in front of other calenders by sliding the block *F* along the groove in the floor. The process is repeated until the whole tire is built up.

This is the invention of C. H. Gray, of the India Rubber, Gutta Percha & Telegraph Works, Silvertown, England.

William R. Perrin Co., with offices in Chicago, and factories at Argyle, Illinois, is putting a new type of vacuum dryer on the market. This company since the death of the late Mr. Perrin has been managed by Mr. Charles Johnson, its secretary.

YOUNG'S GRAVITOMETER.

THIS is a direct reading specific gravity balance for solids, liquids, pigments or other finely divided materials insoluble in water. The instrument is so designed as to eliminate all weighings and calculations, one balancing only being necessary for the determination of a gravity.

The operation of the balance for the determination of the gravity of a solid is as follows: With the balance leveled by means of the thumb screw in the base, the sample to be tested is suspended on the hook or needle point and the weight moved to the position which will influence the pointer to register at ∞ (infinity) on the scale. (Fig. 1.)

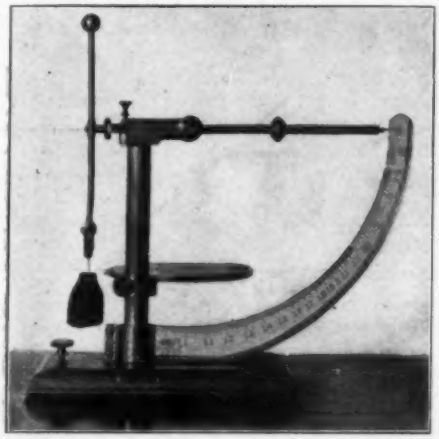


FIG. 1.

A beaker of distilled water is then placed on the swinging shelf which is brought into position to allow the sample to be fully immersed, making sure that no air bubbles adhere to the sample. The pointer will then indicate the gravity of the sample to well within one per cent., whether the sample be heavier or lighter than water. (Fig. 2.)

In the determination of the gravity of liquids a sinker is used and the liquid gravity is read on a scale on the reverse side from the solid gravity scale.

For the determination of the gravity of pigments a receptacle is provided which is suspended in the place of the hook, and the operation is the same as with solids except for the use of a counterweight.

The "Gravitometer," which is now on the market, is the invention of Philip E. Young, of the Acushnet Process Co., New Bedford, Massachusetts, and full particulars may be obtained from him or from Eimer & Amend. of New York.

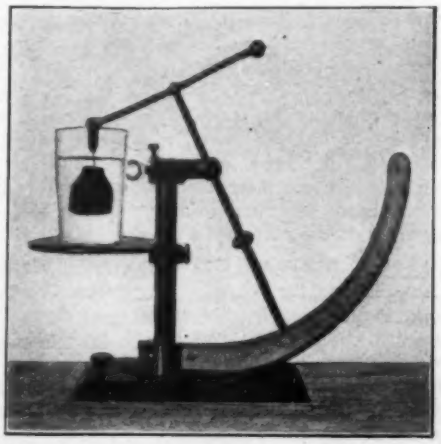


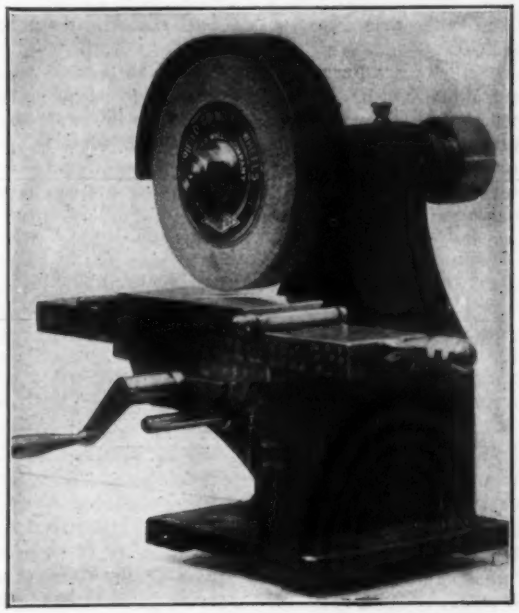
FIG. 2.

This balance is specially adapted for the rubber manufacturer, it being possible to determine accurately and quickly the gravities of all his products.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

GRINDER FOR STRENGTH TEST RUBBER SAMPLES.

A NEW machine shown in the accompanying illustration has been gotten out for the purpose of preparing samples of rubber of absolutely uniform cross section throughout the sample when the same are to be used for tests for tensile strength. This machine was designed primarily for the purpose of grinding the



rubber backing off of samples of rubber lining to hose before the lining was tested for breaking strength.

In preparing a sample of hose lining for test, a section of hose several inches in length is slitted along its length, and the interior lining with rubber backing is stripped from the fabric. This strip of rubber is cut to a uniform width of one inch throughout a distance of three or four inches along the middle of its length. The strip is then strapped closely to the platen of the grinder, and is quickly and firmly placed in position by the eccentric rolls shown in the cut. The strip is placed with the smooth side to the platen, leaving uppermost the rough side composed of the rubber backing to be ground off from the lining.

By means of the longitudinal, vertical and cross adjustments of the platen of this grinder, the sample may be quickly ground down to an absolutely uniform thickness throughout the entire length of the test section. This machine requires less than ¼ horse power for its operation, and is made up either as shown in the cut, or fitted with directly connected motor drive. [Emerson Apparatus Co., 251 Causeway street, Boston.]

OTHER MACHINES OF THE MONTH.

A new machine for wrapping strips of paper around finished tires consist of a horizontal, hollow, annular shuttle into which the paper strip is inserted in folds, thus eliminating the usual bobbin. The shuttle and tire revolve at right angles to each other, the strip being withdrawn from the interior of the shuttle as it is wrapped around the tire. [C. Kuentzel, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio.]

Another new machine automatically cuts a sheet of rubber into strips with skived edges for making inner tubes. The calendered sheet is carried by an endless belt forming a moving table, under a series of circular cutters. These are set at an angle and slit the sheet into strips with skived edges, which are afterward cemented together to form the tubes. [E. Nall and W. C. Tyler, assignors to The Goodyear Tire & Rubber Co., Akron, Ohio.]

COTTON NOTES.

LARGE INCREASE OF COTTON EXPORTS IN 25 YEARS.

OFFICIAL statistics of the United States exports for 25 years show that cotton shipments rose from $251,000,000 in the fiscal year 1890 to $610,000,000 for the same period of 1914. The exports during the 25 years reached a total of $8,676,000,000. Exports of cotton manufactures increased from $10,000,000 to $51,000,000 in the time named with a total export in the period of $708,000,000.

In the earlier years Europe took practically all the raw cotton exported, although of late Japan has taken considerable quantities. The total exports of American cotton to Japan in 1912 were about 240,000,000 pounds and in 1914 177,000,000 pounds.

A comparison of the exports of raw and manufactured cotton for the years 1890 and 1914 to the various grand divisions shows following results:

	1890.	1914.
Value of exports of—		
Raw cotton	$251,000,000	$610,500,000
Cotton manufactures	10,000,000	51,500,000
To—		
Europe	1,400,000	8,000,000
North America	2,800,000	21,100,000
South America	2,700,000	3,800,000
Asia	1,700,000	9,000,000
Oceania	800,000	8,800,000
Africa	600,000	800,000

The cotton manufactures exported during the year 1914 included the following quantities, with their destination: China, 89,000,000 yards; Philippines, 86,000,000 yards; Central America, 36,000,000 yards; Cuba, 24,000,000 yards, Canada, 21,000,000 yards; British West Indies, 15,000,000 yards, and India, 14,000,000 yards. As a whole Europe took 7,000,000 yards; South America, 41,000,000 yards; Oceania, 95,000,000 yards; Asia, 125,000,000 yards; Africa, 9,000,000 yards, and North America, 138,000,000 yards.

Cotton imports during the last quarter century were valued at $259,000,000, the largest part coming from Egypt.

While Asia exceeded North America as a market for American cotton goods in the aggregate for the last 25 years, North America, including Canada, British West Indies, Hayti, Cuba, Santo Domingo, and the Central American Republics is now the leading market for American cotton goods.

ACTIVE TIMES WITH NEW ENGLAND MILLS.

Large credit loans have recently been obtained by France and Russia, which are benefiting the manufacturers of New England, particularly those making cotton duck and hosiery as well as woolens.

According to report the French have secured credits for $10,000,000, to which extent orders were placed which are keeping the New England mills busy. Many of these mills were already working overtime producing goods previously ordered, and the new orders will doubtless ensure their operation on a twenty-four hour schedule for weeks to come.

Just as the establishment of these large French credits was followed by the placing of large orders for the government of that country with the New England mills, so have the new Russian credits been the signal for like activities on the part of the agents of the Czar.

Philadelphia manufacturers have been laying in supplies of yarn from the smaller textile centers, which is an indication of prospects of future business encouraged by the low prices of yarns. That similar activity has not been witnessed in New England is caused by the unusually heavy buying from that quarter with the low prices during the early part of the war.

While the large stocks of goods on hand would have allowed the execution of these foreign orders a large proportion of the former are of a quality unsuited to the needs of the belligerent nations. It is, moreover, a question whether the amount of domestic material sold to foreign nations has been sufficient to affect the later course of prices. Buying orders for the domestic trade which may result from a cold snap would make demands upon makers' stocks which they would be unable to meet.

Colored cotton goods have in some cases been taken off the market until supplies of colors become more assured.

BRITISH COTTON GROWING ASSOCIATION.

This association has made satisfactory progress during the last three years, the total quantity handled in its various sections being respectively: 1911, 60,800 bales (of 400 pounds); 1912, 71,400 bales; 1913, 78,800 bales. The operations of the association are in West and East Africa, Sudan and the West Indies. In the year 1914 it is anticipated to attain an aggregate production of 100,000 bales.

A project was launched at this year's Paris Cotton Congress for the establishment of a model cotton plantation in the Punjab district of India. The funds will be provided by a company with a capital of $300,000. The Indian government has granted a free lease of 7,500 acres suitable for cotton, in proximity to the North Western Railway. A system of intensive cultivation will be adopted on the plantation.

REDUCTION OF COTTON ACREAGE.

It is announced that 33 counties in Georgia will make a combined reduction for 1915 equaling 42 per cent. of their acreage planted in cotton. In 15 of these counties the reduction was expected to be 50 per cent. or more than that proportion.

COTTON GINNING RETURNS.

In the government return from October 18 to November 1, ginnings are shown as 2,207,116 bales, bringing the season's aggregate to 9,828,695 bales, or 855,177 over that of same period last year. Sea Island cotton included in the above numbered 43,331 bales, compared with 42,804 bales to November 1 last year.

Ginnings by States to November 1 were as follows:

	Florida.	Georgia.	So. Carolina.
1911.....*bales*	21,038	33,841	1,684
1912.....	11,067	16,276	1,544
1913.....	16,356	24,570	1,878
1914.....	19,270	23,164	877

In four of the cotton States the figures to November 1 exceeded those of the last eight years.

EGYPTIAN COTTON ACREAGE REDUCED.

An Egyptian government decree reduces the acreage of cotton for the agricultural year 1915 by about 50 per cent., with a view to limiting the production to the requirements of the market, and thus maintaining a reasonable price for the crop. The decree provides that the maximum to be cultivated is to be 1,000,000 "feddahs" or 1,100,000 acres. Planting is entirely prohibited in the Upper Egypt basin. It is also prohibited for any owner or lessee to cultivate more than one-quarter of the area of an estate. Lands benefiting from summer irrigation will be considered as forming separate estates.

SEA ISLAND COTTON IN SANTO DOMINGO.

According to the report of the British Chargé d'Affaires at Santo Domingo, cotton shipments from that source decreased from 350 tons in 1912 to 247 tons in 1913. Though progress is not being made generally in the cotton growing industry of the island, there is a prospect of the plantation of Sea Island cotton established by an American company at that point turning out a success.

CANADIAN OPINION ON THE WAR.

In discussing the economic consequences of the war, the "Revue Economique Canadienne" remarks that the profits which may be made by Canadian factories in consequence of the precarious situation of European industries will only be temporary and will be insufficient to make up for the losses which Canada will inevitably suffer by the war.

NEW TRADE PUBLICATIONS.

A NEW RUBBER MAP.

THE Republic Rubber Co., of Youngstown, Ohio, has had prepared a world map which should be appreciated by the trade, for it designates, by special colorings and other markings, the rubber producing countries of the world and the rubber markets. It also gives the routes between the ports of the countries of production and sale, with the distance between these various points. The distance from Pará to New York is thus shown as 2,900 miles, while the route from Colombo to San Francisco is 10,059 miles long and that from Colombo to New York, via the Panama Canal, is 13,361 miles in length—the distance between the Canal and New York being 1,961 miles. From Colombo to London by the Red Sea route and the Mediterranean is shown to be 8,000 miles, and by the southern course, touching at Cape Town, Congo River and the Cape Verde Islands, 12,000 miles. In addition to these features, the map attempts to show only the important divisions of the various countries and the chief cities, the special information it is intended to convey standing out clear and distinct.

PREVENTION OF ELECTRICAL ACCIDENTS.

In a neat booklet the Travelers Insurance Co. of Hartford, has alphabetically grouped a number of points in which foremen and others in positions of responsibility require to be on the watch for danger.

While these include general merchanical operations, some of them specially affect the rubber industry. Under the latter head comes the advice to electrical workers not to handle any electrical apparatus without wearing rubber gloves, which should be kept in good condition. Safety belts should be provided for men working on overhead lines and dark-colored glasses for those obliged to look at intensely brilliant arcs. An experienced assistant should be always at hand to render aid in cases of emergency. The floors around switchboards and high tension apparatus should be non-conducting, and should be covered with rubber mats to provide effective insulation. Water should never be permitted to stand upon the floors in the vicinity of any electrical apparatus.

THE NETHERLAND CHAMBER OF COMMERCE IN AMERICA.

The eleventh annual report of the Netherland Chamber of Commerce in America, for the year ending March 31, 1914, has been issued, and contains much interesting matter as to the operations of the chamber on international questions in which the Netherlands is interested, as well as various details regarding the Dutch East Indies.

Forming the connecting link, geographically speaking, between the mainland of Asia and Australia, the Dutch East Indian Archipelago consists of a group of islands lying between the fifth degree northern, and the tenth degree southern latitude, and between 95 deg. and 140 deg. eastern longitude. The total area of these islands is about 587,370 square miles, and their population over 40,000,000, the principal islands being Java, Sumatra, Borneo and Celebes. In part this territory is under the direct rule of the Dutch government, while in other sections it is in the hands of native rulers, tributary to the Dutch Crown, of which they recognize the suzerainty.

Statistics for 1912 show the total investments in rubber in the Dutch East Indian Archipelago to have been $83,654,390, made up as follows: British, $57,496,170; Dutch-Belgian, $14,398,395; French-Belgian, $10,782,565; German, $500,890; American, $402,000; Swedish, $74,370. The large amount of British capital was attributed to the "rubber boom" of 1910.

Various features of the industries of the Dutch Indies are dealt with.

EDITOR'S BOOK TABLE.

SLAVE STORIES IN RUBBER SEEKING. BY J. W. L. THE Walter Scott Publishing Co., Limited, London and New York. [8vo, 251 pages, cloth covers.]

TO those who consider that time lost which is not spent in some manner associated with the rubber business, this book offers an opportunity to carry their hobby into the realm of fiction; while at the same time it is not likely to lack appreciation from the general reader.

The book is divided into three sections and twenty-one chapters, each in itself a complete tale. The first section contains, under the title "Rubber Romances," twelve complete stories, most of which terminate tragically, including the tale of "The Rubber Fortunes Syndicate," which relates how John K. Bell, "an American optimist," and Joseph O'Hagan organized at Santander, on a basis of pure imagination, a £250,000 syndicate, in £1 shares, which in six weeks were five times oversubscribed in London—the result in the way of returns to the investors being probably viewed in the light of tragedy. Then there is the story of "The Rubber King," Sir Peter Dinero, a self-made man, whose greed leads him to attempt a corner on rubber—an attempt of course frustrated by the hero of the tale, Captain Paul Marline, R. N., representative of the Rubber Investors' Committee. Captain Marline, as commander of H. M. cruiser, "Python," is also the hero of another story, "The Discovery of Gummer."

The most interesting chapter in the book to those concerned in the practical application of rubber to the needs and comforts of life will doubtless be the one entitled "A Rubberless World." While this is a dream story it brings a realization of how much more than is ordinarily appreciated we are dependent upon rubber. Starting with an office in Leadenhall street, where first a report is received of a rubber shortage and later that all the rubber in the city has disappeared, the dismay caused by the failure of the rubber office stamps to perform their usual office spreads when the elastic sides and rubber heels drop from the wearers' shoes; papers fall apart because rubber bands fail of their mission; erasers melt away; no telegrams or cables can be sent because the insulation has disappeared from the wires and cables; motor cars are put out of commission through the failure of their tires, etc., etc.—all ending in a vast conflagration which destroys the entire city, its suppression being rendered impossible by the absence of hose.

The second section is devoted to slave stories, under such titles as "For Sale—Two Hundred Souls"; "The River of Despair"; "Freedom's Dream," and "Milestones of the Dead," the last being taken from "John Bull," said to be founded strictly on fact and recounting the tale of torture inflicted on Africans in the caravan of one Don José Ricardo. One such victim, who fell sick and was unable to proceed further was pegged to the ground with a gourd of water within a foot of his lips, while his body, exposed to the intense heat of the sun, was covered with salted cloths intended to attract butterflies and bees; another, an old woman, had her wrists cut in little knicks so that she would slowly bleed to death, and that she might die in comfort consistent with the civilization carried to that country by the gallant Don and his type, she was placed on an ant hill. Still another, a young girl, was suspended over a slow burning fire, from which she was rescued to tell this tale.

"The Bridge of the Incas," which appears in the third section, under "Patagonian Tales," is probably the most satisfactory story in the book, for in it nature comes to the aid of justice, the imagination of the writer producing a volcano which at just the right moment becomes actively eruptive, assisting the escape of the young lovers and at the same time consigning the villain to the fiery doom he so well deserves.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE OBITUARY RECORD.

ALFRED BOOTH.

ALFRED BOOTH, head of the Booth line of steamships plying between Liverpool and the Amazon, and with a special service between New York and the Amazon (the foremost rubber carrying company anywhere in the world) died on November 1 at his home in Liverpool, England. While he spent by far the greater part of his eighty years in England, still he had so many interests in this country and came here so frequently—in addition to the period of sixteen years during which he resided here—that he was widely known in American business circles.

ALFRED BOOTH.

He was born in Liverpool, in 1834, and while still a young man established in that city a company for the importation of leather for the manufacture of footwear; but he was not satisfied with this restricted outlook and in 1857, while but 23 years of age, he came to this country to embark on larger enterprises. He lived here until 1873 and in the meantime he established a large leather manufacturing company in Gloversville, New York—known for many years as Booth & Co. and now known as the Surpass Leather Co.—and also established the Booth Steamship Line, with steamers plying between New York and Para and Liverpool and Para. It was this particular enterprise that brought him in close touch with the rubber industry, as almost all of the rubber exports from Para to New York and Liverpool during the last forty years have been carried in the ships of this line. From a small beginning the operations of this company have increased until it has regular sailings four times a month from Para to Liverpool and almost as frequently from Para to New York; and some of its ocean going steamers penetrate the Amazon valley as far as Iquitos, over 2,000 miles from the Atlantic Ocean.

Mr. Booth was not only successful in the various commercial matters in which he was interested but he was well known in social circles in this country. He married, in 1867, the daughter of Benjamin F. Butler, Jr., at that time the leader of the New York bar, who a number of years earlier had been the law partner of Martin Van Buren and Attorney General in the cabinet of President Jackson. Mr. Booth is survived by his wife, six children and a number of grandchildren, all prominent in the social, commercial and philanthropic life of Liverpool and vicinity.

A. R. MACDOUGALL.

A. R. MacDougall, assistant superintendent of the Federal Rubber Manufacturing Co., Milwaukee, died at his residence in that city on November 20, from diphtheria, after a few days' illness. He was born in Nova Scotia, thirty-seven years ago, but went to Boston when he was twenty-three, and entered the employ of the Boston Woven Hose & Rubber Co., with which company he remained until 1912, when he went to Milwaukee to take an assistant superintendency in the Federal factory. He was highly esteemed by his fellow employes, and particularly by the workmen in his department.

MARGARET E. KNIGHT.

Miss Margaret E. Knight, who died at the Framingham Hospital some six weeks ago, was at one time a person of interest in the rubber business. Miss Knight had often been referred to in public prints as the "Woman Edison" because of the number of patents which had been issued in her name alone, or with co-inventors. It was said that she had many bright ideas on mechanical subjects but that most of her inventions were not mechanically or commercially successful until they had been perfected by others who were called in to assist her.

In 1879 she invented a machine for making square bottomed paper bags, which was sold to a corporation for a considerable sum and is in use today. It was several years later when she became interested in rubber shoe making, and in 1890 she secured two patents for machinery for cutting rubber soles from the sheet. It is, of course, known to the trade that such soles were all cut by hand, as the edges had to be on an angle or bevel. Between that date and 1894 she was granted eight or more patents for rubber sole-cutting machines. At this time she secured the interest of Colonel Lockwood of this city and Robert D. Evans, of the American Rubber Co. of Cambridge. Through their pecuniary assistance she was enabled to hire experts, and at last a practical machine was completed. This worked excellently in the shop where it was built, and it was installed in the American Rubber Co.'s plant in East Cambridge, where a number of prominent rubber footwear manufacturers were invited to see it in operation.

Such was Miss Knight's connection with the rubber trade. Her other patents (she is said to have secured over 80) run from a spit on which to roast turkeys, and clasps to hold a blanket over a truckman's lap, to window-frame sashes, boring tools and automobile wheels. Miss Knight was born in Manchester, New Hampshire, about 75 years ago, later residing in Springfield and Ashland, Mass., and for the last 25 years in South Framingham, where she occupied a stately old mansion in which she had her "workshop" and laboratory, where she spent much of her time in research and experiment, but making frequent trips to Boston or New York, where her experimental machines were built. She was a tall, robust woman, white-haired, but very active for her age. She had many law suits, but claimed that every one was decided in her favor. She had a shrewd faculty in securing financial backers to experiment and exploit her inventions. About four months ago she was attacked by a severe illness, and was removed to the Framingham hospital, where she died on October 13.

INFORMATION WANTED ABOUT ANDREW H. SMITH.

The Connecticut Mutual Life Insurance Co., of Hartford, has written to this publication to the effect that in 1887 it issued a policy of insurance on the life of Andrew H. Smith, who gave his address as New York City and his occupation as manufacturer of rubber goods. The company has not heard from Mr. Smith for many years, and thinks that he may have deceased. The insurance is still in force, and in case Mr. Smith is not living, and left heirs, the company is prepared to entertain a claim on the policy. If anyone in the trade knows Mr. Smith or can give any information regarding him or any possible heirs, the insurance company would be glad to get the information.

MR. BRADY'S RUBBER HOLDINGS.

The estate of Anthony N. Brady has been appraised at over $77,000,000, of which amount over $67,000,000 represents investments in stocks and bonds. He had the following large holdings in rubber companies:

In the Intercontinental Rubber Co. he held 589.60 shares preferred, valued at		$58,960
do	40,809.60 shares common, valued at	306,072
In the United States Rubber Co. he held 45,020.40 shares first preferred, valued at		4,276,938
do	75,754.20 shares second preferred, valued at	3,787,710

The Rubber Trade Association of New York.

THE formation of the Rubber Trade Association of New York with the election of officers and appointment of committees was mentioned in the November number of this journal. The Constitution and By-Laws have since been published under the general title:

GENERAL RULES AND REGULATIONS RELATING TO THE CONSTITUTION AND BY-LAWS OF THE RUBBER TRADE ASSOCIATION OF NEW YORK.

These rules and regulations are divided into a preamble and thirteen articles. The more important and interesting of these articles are given in full below together with a brief summary of the other articles.

PREAMBLE.

I. The association shall be called "THE RUBBER TRADE ASSOCIATION OF NEW YORK."

II. The objects and purposes of the association are to foster and promote the best interests of the rubber trade as a whole for the mutual benefit of all concerned, importers, brokers, dealers and consumers; to reform any abuses relative thereto, to procure uniformity and certainty in the customs and usages of the rubber trade, to settle differences and disputes in the trade by arbitration, to promote a more enlarged and friendly intercourse between those engaged in the trade, and for those purposes to make and enact rules for the proper supervision and efficient conduct of the trade, including the regulation of mutual transactions between members of the association.

Article I states that any co-partnership, corporation or individual engaged in the business of crude rubber in the United States shall be eligible to membership. It refers to the obligation of the members to conform to the rules of the association. Each firm, co-partnership or corporation is only entitled to one vote in the association.

ARTICLE II.—MANAGEMENT.

The first section of this article is as follows:

SEC. I. The management and conduct of the affairs of the association shall be entrusted to a board of eleven (11) directors elected from members of the association in good standing, seven of whom shall constitute a quorum. There shall be elected by the board of directors each year from among those serving on the board a President, Vice-President, Secretary and Treasurer of the association.

The second and third sections refer to the terms of the various officers and the appointment of the various committees.

Article III describes the method of applying for membership.

ARTICLE IV.—MEMBERSHIP DUES AND FEES.

Sections one and two are as follows:

SEC. I. Initiation fee for membership to the association shall be $25.00.

SEC. II. The annual dues shall be $25.00 payable in advance on the first day of November in each and every year.

Sections three, four and five refer to the payment of dues.

ARTICLE V.—OFFICERS AND THEIR DUTIES.

SEC. I. The officers shall consist of a President, Vice-President and Treasurer and Secretary, who shall continue to hold their offices until their successors are elected and assume office.

The other sections describe the duties of the different officers.

Article VI.—Association Meetings—describes the place and time of holding meetings, the order of business and calling of special meetings.

ARTICLE VII.—VACANCIES IN THE BOARD OF DIRECTORS.

As indicated by the title, this article describes the procedure for filling vacancies in the board of directors and also for the removal of any director whose conduct is prejudicial to the interests of the association.

ARTICLE VIII.—ARBITRATION.

This article having to do with a matter of interest to the whole rubber trade is reproduced in full.

SEC. I. The Arbitration Committee shall, unless otherwise provided in the contract, have the power when called upon by a member or a non-member to arrange for a settlement by arbitration of matters in dispute between such member and any other member, or between a member and a non-member in connection with any business transaction entered into between them, and the following shall apply to all such references:

SUBDIVISION (*a*). The disputants or one of them, shall apply to the Committee for an appointment of arbitrators and the Committee shall thereupon appoint two arbitrators and an umpire, who need not necessarily be members of the association but at least one of whom shall not be a member of the Committee, for the purpose of settling the dispute. No arbitrator or umpire shall act in any case where he is interested in the subject-matter of the dispute, without the consent in writing of all parties to the dispute. A fee of $2.50 in respect to such appointment shall be paid to the association by the party or parties to the dispute who shall apply for such appointment. Such fee, including arbitration and umpire fees, shall be ultimately borne and paid by the losing party, unless otherwise awarded.

SUBDIVISION (*b*). The fees for arbitrators or the umpire shall be $10.00 each, but such arbitrators or umpire shall be awarded extra fees, in the discretion of the Arbitration Committee, if in the judgment of the Committee said arbitrators or umpire shall have performed unusual or extraordinary services during the arbitration on which they have served.

SUBDIVISION (*c*). In the event of the arbitrators being unable to agree on an award, they shall refer the dispute to the umpire.

SUBDIVISION (*d*). The umpire and arbitrator shall be at liberty to take such evidence and offer such documents in possession of the parties in dispute as they may deem necessary, and shall also have the right to require any of the parties to give such testimony in the matter in dispute as may be required, and for that purpose to require the attendance of the parties at such times and places as may be fixed for the hearings.

SUBDIVISION (*e*). Necessary costs and disbursements of the successful party, as well as the stenographic fees shall be paid by the losing party, unless otherwise awarded. An award of such arbitrators or umpires (as the case may be) shall be absolutely final and binding upon the parties for all purposes, unless the parties dissatisfied, forthwith, within three working days thereafter, lodge with the Committee a written notice of appeal, together with a fee of $50, and serve a like notice upon the other party or parties to the dispute, in which case the Committee shall review the award and shall determine the rights of the parties.

SUBDIVISION (*f*). The Committee shall have the like rights and powers as are hereinbefore conferred on the arbitrators and the umpire for the purpose of enabling them to determine the rights of the parties, and their decision shall be absolutely final and binding upon all parties to the dispute. The said fee of $50 shall be ultimately borne and paid by the losing party, unless otherwise ordered by the Committee.

If an arbitration covers a case where the seller has offered an allowance which the buyer has rejected, claiming that the allowance should be greater, and the arbitrators decide that the allowance should be equal to or lower than offered by the seller, the buyer shall be considered as the losing party and pay the fees. Such offers of settlement must be stated in the application to the Committee prior to arbitration.

SUBDIVISION (*g*). Members of the association, by signing the within rules and regulations, agree to submit their differences to arbitration as herein set forth, and to abide by the award. Any member of the association who refuses or neglects to submit any matter in dispute for arbitration or to abide by the award duly made, shall be suspended from privileges of the association in the discretion of the board of directors, and it shall be mutually agreed between all the members that such conduct on the part of any one or more members shall justify the others in dealing with such member only on a cash basis in the delivery of goods, supplies and materials used in the crude rubber trade.

SUBDIVISION (*h*). When a matter in dispute has been referred to the arbitrators or umpires (as the case may be) the said arbitrators or umpire shall require the party who considers himself aggrieved to file with it a written complaint, specifying the nature and grounds of his grievance, within the time fixed by them. Said arbitrators or umpire, after receipt thereof shall serve notice upon the member or person against whom the com-

plaint is lodged to make his answer to the same within a time specified, and the said party shall within the time cause an answer to be filed with the arbitrators setting forth concisely his reply to the matters set forth in the complaint. If there is no dispute as to the facts, the arbitrators may proceed to determine the matter under consideration without calling any witnesses or requiring any formal hearings. If from the complaint and answer filed by the disputants it appears that the facts in question are disputed, the arbitrators or umpire (as the case may be) shall then proceed forthwith to hear and determine the matter by calling the witnesses and requiring any further testimony that it may deem advisable in the premises.

ARTICLES IX TO XIII.

Article IX describes the method of expelling a member from the association should that ever become necessary. Article X covers the proper procedure in tendering all resignations. Article XI states the limitation of the authority of officers to contract debts for the association. Article XII refers to the interpretation of by-laws and article XIII to their amendment.

RUBBER SOLES AND HEELS.

The demand for rubber sole shoes has led a number of rubber factories to enter the field, among the largest of these being the New York Belting & Packing Co. This company's line embraces hundreds of different patterns of soles and heels, in qualities to meet all requirements, from the high grade "Indestructible" combination sole to the lower-priced all rubber article.

This company's large press room facilities enable it to meet all demands as to quick deliveries even in the height of the season.

Its experimental department is constantly working with a view to the improvement of the line, the feeling being entertained that for some classes of shoes, owing to the high cost and scarcity of leather, rubber soles will be used permanently.

The accompanying illustration is selected from a large bound volume of drawings showing the range of sizes of some of the styles most commonly called for. [New York Belting & Packing Co., 91-3 Chambers street, New York.]

FREIGHT RATES TO PACIFIC COAST CHANGED.

To meet water competition, the transcontinental railroads formerly made rates from New York to Pacific Coast terminals that were less than rates to intermediate points.

By an amended clause of the Act to Regulate Commerce, carriers are prohibited from charging more for a short haul than for a long haul. The railroads have therefore readjusted charges on less than carload shipments from New York to intermountain points, and have cancelled the former commodity rate.

The following are the articles upon which "less than carload" commodity rates from New York and eastern points to Pacific Coast terminals were cancelled November 15, 1914. On that date the class rates subject to Western classification went into effect on these articles, advancing the former rates:

Rubber boots and shoes, including tennis shoes (canvas tops) and felt boots; rubber corks, rubber discs for bottle stoppers; rubber, crude; reclaimed rubber or rubber shoddy; rubber tissue, rubber sheeting and rubber compound repair stock in sheet form; rubber rings for fruit jars; rubber spittoons; rubber springs, including rubber springs (or bumpers) for vehicles; rubber tiling; rubber tubing; tires (vehicle), solid rubber, attached to iron channels or rims; wire and wire goods, viz., wire, insulated or covered; wire rope or cable; wire telephone or electric light cables; copper wire, copper-clad wire, copper rope or copper cable.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A Portuguese agent desires to secure automobile tires and equipment, etc. Correspondence should be in Portuguese or French. Report No. 14,216.

An American missionary hospital in the Far East wishes to be placed in communication with American firms manufacturing rubber goods and drug sundries. Report No. 14,249.

A large rubber manufacturing concern in Great Britain wishes to contract for regular consignments of 100 to 500 gallons of tetrachloride of carbon from American manufacturers. Report No. 14,304.

An American consular officer in the United Kingdom has been furnished with a list of electrical articles now finding ready sale in that country. This list includes electrical cables insulated with vulcanized rubber. Report No. 14,416.

A Portuguese firm wishes to purchase automobile tires. Correspondence should be in Portuguese or French. Report No. 14,419.

A company in the East Indies is prepared to export plantation rubber, either pale crêpe, smoked sheet or any other kind, according to the desire of the purchaser. Report No. 14,429.

A firm in Europe is in the market for pharmaceutical accessories, such as rubber tubes, etc., Report No. 14,430.

The Stavanger Elektricitetsverk, of Stavanger, Norway, is in the market for vulcanized rubber insulated wire according to the standard of the Verband deutscher Elektrotechniker of 1910, especially for 1½ square millimeters (0.002325 square inch) size. Samples should be forwarded and prices quoted by the 10,000 meters (32,808.3 feet).

A firm in Italy desires to purchase Brazilian, Bolivian and Peruvian crude rubber. This firm is in a position to handle considerable quantities and is willing to purchase on any terms, c. i. f. destination. References given. Correspondence should be in French or Italian. Report No. 14,381.

A company abroad has requested the American consul in that place to put it in touch with American manufacturers and exporters of ponchos, sleeping blankets and ground sheets combined. The inquirer understands that the type of article wanted is used by the American troops in the field. The firm has several branches throughout the country. Correspondence should be in English. Report No. 14,554.

GARDEN HOSE IN CONTINUOUS LENGTHS.

Corrugated reel garden hose in lengths of 500 feet or less, in sizes of ½, ⅝ and ¾-inch diameter, black or red, has been added to the regular line of smooth hose manufactured by the New York Belting & Packing Co. It is sold under the following trade marks: "Magic," "Delta" and "Jubilee Corrugated."

INTERNATIONAL EXPOSITION OF INVENTIONS.

Under the above title an exhibition is to be held from December 12 to 19, inclusive, at the New Grand Central Palace, New York, in the interest of inventors, who will have an opportunity of displaying inventions on which they have secured patents. American Institute gold, silver and bronze medals and diplomas will be awarded to those whose products combine, in the opinion of a qualified jury, the greatest measure of novelty and utility to the world with mechanical and commercial practicability. It is proposed, also, to organize, from representatives of the several associations of inventors and patentees in America, a Congress of Inventors, which will put on record the needs of their class and the injustice with which they are obliged to contend under present legislative conditions. Lectures on subjects pertinent to the interests of inventors and patentees generally will also be given in connection with the show and congress.

The British Embargo on Crude Rubber.

A Joint Committee of Manufacturers and Importers Appeals to Washington.

WHEN late in October cables were received in New York stating that England had placed an embargo on the shipments of crude rubber from any British colonial ports to any point except London, and when, about the same time, other cables were received intimating that the government was about to place an embargo on all crude rubber shipments from the home ports of England as well, the rubber trade of the United States was quick to realize the seriousness of the situation. A joint meeting was held on November 2 of the executive committee of the Rubber Club of America and a special committee appointed by the Rubber Trade Association of New York. As a result of this meeting a committee of manufacturers and importers was appointed, consisting of the following members: H. Stuart Hotchkiss, of the United States Rubber Co.; Arthur Marks, of The B. F. Goodrich Co.; George B. Hodgman, of the Hodgman Rubber Co., president of the Rubber Club of America, and Wm. E. Bruyn, president of the Rubber Trade Association of New York, who were to see what steps might be taken to relieve the situation. The committee at once got into communication with the State Department and brought to the attention of the Acting Secretary the great hardship that would fall upon the rubber industry of this country if this embargo were long to continue. The two letters sent out by the secretary of the Rubber Club to leading members of the trade, which are given below, indicate what has been done by the committee and how the matter now stands:

November 17, 1914.

Announcement was made on November 16 that the British Government had placed an embargo on all shipments of crude rubber from England in addition to that formerly placed on direct shipments from her colonies. This embargo seems to have been due to the re-exportation of crude rubber from the United States to the enemies of Great Britain.

The matter was taken up at once with the proper authorities at Washington by the special joint committee of rubber importers and manufacturers with a view to making some arrangement whereby these embargoes may be raised through a guarantee that the rubber will not be re-exported.

H. S. VORHIS, Secretary.

November 24, 1914.

The joint committee of rubber manufacturers and importers has been in constant touch with Washington and London since its report on November 17. It believes that it is working through every public and private channel available. So far nothing tangible has resulted and the committee regrets that it can only report that it will spare neither time nor expense in its efforts to relieve the situation.

As the matter now stands, rubber cannot be imported into the United States from any British port. England has the power to withhold her rubber from us. Until she is sure that her wants are fully supplied and is convinced that rubber coming to the United States will not be re-exported to her enemies, the embargo probably will not be raised. Your committee is working along these lines.

A joint committee has been appointed by the Rubber Growers' Association and the Rubber Trade Association of London, which is to confer at once with the proper British cabinet officer to ascertain if some arrangement cannot be made to lift the embargo. This committee is co-operating in every way with the joint committee of manufacturers and importers of the United States.

H. S. VORHIS, Secretary.

It need only be added that the situation is the same now as mentioned in the secretary's letter of the 24th. The British Government as yet has given no intimation as to its action.

OTHER APPEALS TO THE STATE DEPARTMENT.

In addition to the activities of the joint committee mentioned above, appeals have been made to the State Department from private quarters. Among these was one sent late in October by W. L. Wadleigh, who recently established the firm of Wadleigh & Co., Limited, in Singapore, for the purpose of buying and shipping crude rubber direct to manufacturers in the United States. In reply to his letter he received the following communication from the Acting Secretary of State:

Department of State, Washington.
November 6, 1914.

Mr. W. L. Wadleigh, Sir: Referring to your letter of October 24, 1914, and to this department's reply of November 3, 1914, regarding the embargo against the shipment of crude rubber from British Colonial ports to the United States, you are informed that the department recently telegraphed the American ambassador at London, England, that American interests desire the lifting of the embargo on rubber, and requested the ambassador to ascertain upon what grounds this embargo had been instituted, and whether shipments might be allowed to the United States from Great Britain, her colonies and dependencies. A similar telegram was sent to the American Consul General at Singapore, Straits Settlements, with the additional statement that American importers would doubtless, if required, give a guarantee against the re-exportation of the raw materials received.

A telegram just received from Singapore states that the American Consul is awaiting information as to the grounds for the embargo and whether exportation to the United States would be permitted if a guarantee against its re-exportation was given. It is added that the exportation of gutta and jelutong is now permitted.

You will be advised when further information is received.

I am, sir, your obedient servant,

(Signed) ROBERT LANSING, Acting Secretary of State.

WHAT NEW YORK IMPORTERS THINK OF THE SITUATION.

New York rubber importers, when recently interviewed in regard to the British embargo, appeared to entertain somewhat different opinions as to its operation and effect. A member of a large importing house spoke as follows:

"It has been privately understood from the British consul that England has no desire to interfere with legitimate American rubber export trade. It is believed rubber shipped from the United States is reaching Germany through Norway, Sweden, Denmark and Italy. As soon as satisfactory guarantees can be made, and certified papers exchanged between the British consul and the consul of the countries to which the rubber is being shipped showing that it is a bona fide shipment to a non-combatant, the restriction will be removed. There is no question but London has plenty of rubber as evidenced by the recent reduction of price from 27*d*. to 25*d*. The embargo will be lifted in a few days, as soon as satisfactory arrangements can be made controlling United States shipments."

Another importer took a somewhat different view. Here is what he had to say on the situation:

"There is belief in some quarters that London is short of rubber and the embargo ruling is the result of England's desire to be assured that her rubber supply will not be interfered with. It does not appear from the strict watch the United States Government is keeping on ruber shipments that England can have any serious ground in believing that great quantities of rubber are reaching her enemies by way of the United States."

Another said that there was but little rubber in sight and no large cargoes afloat, and if he had any quantity of rubber on hand he would hold it for the advance which he believed inevitable.

H. M. Leake, Economic Botanist, United Provinces, India, has been appointed principal of the Agricultural College Cawnpore. He is a son of W. Martin Leake, secretary of the Ceylon Association, London.

Sweden's output of rubber shoes in 1912 represented 3,869,066 pairs, value $2,128,997. Imports of rubber at Goteborg amounted in 1912 to 558,728 pounds, and in 1913 to 622,405 pounds.

MR. BUCKLETON'S HOME FOR BELGIANS.

MR. ERNEST E. BUCKLETON, president and general manager of the Northwestern Rubber Co., Liverpool, England, who has been spending a few weeks in the United States, is doing notable work for the Belgian refugees. It will perhaps be remembered that he knows personally the whole of the rubber trade in England and on the Continent. The suffering of the Belgians, therefore, not only those connected with the rubber industry, but the whole nation, appeal to him very strongly. As a practical measure of relief he has turned a large house he owns in Liverpool into a refuge for them. Here 31 are already accommodated and he ex-

ERNEST E. BUCKLETON.

pects shortly to be able to take care of 75. These people are of the better class of Belgians but are wholly destitute. They are fed very simply but well, and wherever possible shown how to help themselves. To further this work Mr. Buckleton made an earnest appeal to citizens of Akron, where he is well known, and generous contributions were at once forthcoming. In Trenton he also received a warm welcome, a club there, to which he once belonged, subscribing $500 for a start. The funds that are thus collected are sent to the Belgian Consul at Liverpool. The manner in which these funds are expended is submitted in detail to the subscribers from whom they come.

With 200,000 Belgians in England at the present time, and nearly 700,000 in Holland, in addition to the five or six millions in Belgium, all of whom are destitute, the object is one that must appeal to everyone. Mr. Buckleton is by no means insistent upon Belgian relief funds being sent directly for his own work; indeed he urges that as soon as $500 is collected it be cabled to the American Ambassador in London for the Belgian Relief Fund, as the wants are pressing and immediate. His argument in favor of this line of charity instead of the Red Cross is that the soldiers are clothed and fed by their own governments. The Red Cross is also supported by the governments, while the ill-clad, starving Belgians have no such aid.

When it was brought to Mr. Buckleton's attention that the Rubber Club of America was raising a fund for the Red Cross (or for any other relief organization) he was most anxious that his many friends in the rubber trade should remember the Belgians. Donations sent to the Rubber Club, marked "Belgian Relief Fund," would go to that fund in general. Those marked "Belgian Consul, Liverpool, Account No. 8," would be applied to Mr. Buckleton's relief work.

Incidentally, it is interesting to note that this energetic, warm-hearted British-American is supplying yarn for hosts of busy knitters and lending a helping hand to distressed individuals of a variety of nationalities.

THE RUBBER CLUB'S RELIEF FUND.

UNDER date of November 11 the secretary of the Rubber Club of America sent the following appeal to the active and associate members of the club:

"The members of the club in the recent vote gave an overwhelming majority in favor of not holding our annual banquet this season, and instead making a contribution to the American Red Cross, or any of the other humane agencies, for the relief of the suffering caused by the war in Europe, as may be preferred by the donors.

"It is hoped that each active and associate member will contribute at least $8—the price of the banquet ticket of last January—and as much more as he feels inclined to add. This is a voluntary contribution and not an assessment."

A somewhat similar letter, but going rather more into detail as to the expectation of the club in reference to this fund, was sent to the firm members.

CONTRIBUTIONS TO THE RUBBER CLUB RELIEF FUND.

In response to the letters sent out by the club's secretary, contributions to the amount of $1,982 had been received up to November 25, including the following:

FOR THE AMERICAN RED CROSS.

Arnold & Zeiss, 277 Broadway, New York	$250
Roland H. Ballou, Treasurer Manhasset Manufacturing Co., Providence, R. I.	100
Hood Rubber Co., Watertown, Mass.	100
Fisk Rubber Co., Chicopee Falls, Mass.	50
The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.	50
U. S. Rubber Reclaiming Co., Inc., 30 East Forty-second street, New York	50
L. Littlejohn & Co., 129 Front street, New York	50
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.	50
Mechanical Fabric Co., Providence, R. I.	25
F. H. Appleton & Son, Inc., Boston, Mass.	25
R. J. Caldwell & Co., 15 Park Row, New York	25
Federal Rubber Manufacturing Co., Milwaukee, Wis.	25
Reading Rubber Manufacturing Co., Reading, Mass.	25
Obalski & Sweeney, 24 Stone street, New York	25
Ed. Maurer Co., Inc., 80 Maiden Lane, New York	25
St. Mungo Manufacturing Co. of America, Newark, N. J.	25
The B. F. Goodrich Co., Akron, Ohio	25
Lee Tire & Rubber Co., Conshohocken, Pa.	25
L. J. Mutty, Boston, Mass.	25
Boston Belting Co., Boston, Mass.	25
Republic Rubber Co., Youngstown, Ohio.	25
Gutta Percha & Rubber Manufacturing Co., 126 Duane street, New York	25
	$1,050

FOR THE BELGIAN RELIEF FUND.

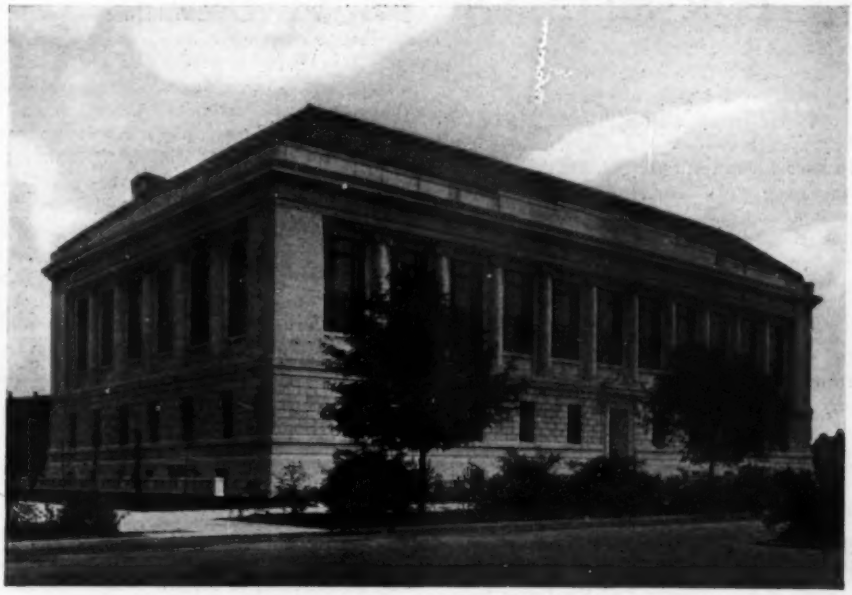
Hodgman Rubber Co., 806 Broadway, New York	$100
Parker, Stearns & Co., Brooklyn, N. Y.	100
INDIA RUBBER WORLD, 25 West Forty-fifth street, New York.	25
Acushnet Process Co., New Bedford, Mass.	25
	$250
Total	$1,300

Besides the sums above noted, $682 has been contributed by members of the club in lieu of tickets for the sixteenth annual banquet, which has been abandoned this season, which brings up the total to $1,982.

Dedication of the Forsyth Dental Infirmary.

THE dedicatory services at the Forsyth Dental Infirmary in Boston on November 24, marked the realization of the dream of the late James Bennett Forsyth, as brought to consummation by his brothers, the late John Hamilton Forsyth, and the last surviving brother, Thomas Alexander Forsyth, all well known in the rubber trade as members and officers in the Boston Belting Co. This infirmary constitutes a lasting monument to the memory of the deceased brothers, and a philanthropy unique in history.

As has been previously told in this journal, the institution has for its object the correction and cure of dental and oral defects in the school children of Boston. It will care not only for tooth troubles, but also related oral conditions, including defective palates, adenoids, etc. All work, of whatever nature, will be performed at the nominal price of five cents a treatment, thus raising the institution out of the category of a distinctive charity.



THE FORSYTH DENTAL INFIRMARY, BOSTON.

The services last Tuesday were in the great infirmary room on the second floor, a room nearly 60 feet wide, 170 feet long and 27 feet high. Here was assembled a company which taxed the seating capacity. Many State and city officials, professional men, philanthropists and members of the medical and dental professions were present. The opening prayer was by Mgr. Splaine, the benediction by Bishop Lawrence. Between these were addresses by David I. Walsh, Governor of Massachusetts; James M. Curley, Mayor of Boston, and President Emeritus Charles W. Eliot of Harvard University, after which Mr. Forsyth, in his quiet, modest way spoke, as follows:

"Mr. chairman, ladies and gentlemen: It seems fitting that I should say a few words to you in regard to the origin and perfection of this new undertaking.

"The idea of providing an institution for the care of the teeth of the children of Boston and its vicinity was first conceived by my brother, James Bennett Forsyth, who died in the year 1909. In carrying out his wishes, my brother and myself desired to erect the infirmary in memory of our brothers, James Bennett and George Henry Forsyth. The building is therefore essentially a memorial foundation. While the consideration of its direct uses was constantly before our minds in its planning and construction, the idea that it was also a memorial has never been lost sight of. The building on this account embodies many artistic features usually lacking in buildings intended solely for hospital purposes.

"In the construction of this institution we have entered a new field. No other building of this character is in existence. The problems we have faced have been encountered for the first time, and for their final solution I have to thank our Building Committee of the trustees, who have given generously of their time, their thought and of their expert knowledge. To their devotion the building owes its evolution and the extraordinary perfection of its professional detail. To the mayor and city council of Boston thanks are also due for their judicious foresight in the purchase of the land between the infirmary and the art museum. Such promptitude as they have shown in this connection cannot fail to act as a spur to other gifts to the city.

"It has been my wish that the infirmary should be as a home to the children, beautiful and cheerful; a protector of their health, a refuge in their pain. By making them healthier and happier I hope it may make them grow to be better citizens of our beloved Boston. If this is accomplished, as I believe it must be, with the coöperation of the dental profession, I shall feel that the gift has been well bestowed."

The key of the building was then presented to Mr. Forsyth by the architect, Edward T. P. Graham—symbolic of the completion of the building and its transfer from the builder to the donor—and Mr. Forsyth in turn handed it to Dr. John F. Dowsley, D.D.S., President of the State Board of Registration in Dentistry, as the representative of the Board of Trustees of the Infirmary. Dr. Dowsley accepted the key with a brief, appropriate reply, after which addresses were given by Milton J. Roseñau, M.D., Professor of Hygiene, Harvard University; Donald M. Gallie, D.D.S., of Chicago, President of the National Dental Association; Edward McSweeney, Trustee of Boston Consumptive Hospital, and William J. Gallivan, A.B. M.D., Commissioner of Health, Boston, and Chief of Bureau of Child Hygiene.

Interspersed in the program were several chorus selections given by children from the school in Roxbury (a portion of Boston) where the four Forsyth brothers received their early education.

After the formal exercises, the building was thrown open for inspection, and during the remainder of the week thousands of persons visited the institution, praising the beautiful building and the philanthropic spirit which prompted its creation.

The building is wonderful, well worthy of its setting near the Art Museum, in the Back Bay Fens. The beautiful colonnaded

front of white marble with broad, high windows has an imposing entrance through a doorway flanked by huge bronze doors, one symbolizing "The Mother, the Giver of Life and Love," and the other "The Commonwealth, the Giver of Health and Learning." In the vestibule are bronze tablets, one bearing the memorial inscription of the donors, the other, the names of the trustees. The hall and stairway are of Siena marble, the ceiling of Guastavino tile. There are bronze busts of James Bennett Forsyth and George Henry Forsyth.

Passing by the secretary's office, the information department and the reception room, we come to the "Founders' Room." This is so beautifully decorated and furnished as to remind one of a baronial hall. A great fireplace of Carrara marble bears the Forsyth coat-of-arms in tiling. On the walls are paintings of personal and historic interest in the Forsyth family, and here are bronze busts of John Hamilton Forsyth and Thomas Alexander Forsyth, the donors. Mr. Forsyth's extensive private library occupies one side of this room. A lecture room occupies the left wing, capable of seating 250 people, in which it is planned to give popular lectures on dental and hygienic subjects. In the other wing are hospital accommodations for surgical patients, and rooms where teeth are extracted. Between these are the usual ante-rooms to the surgical department, and the clinical amphitheatre, a wonderful room, entirely of cement, so built that it can be completely flooded with hot water or steam for cleansing and sterilizing.

The entire building is of fireproof construction; there isn't a bit of wood in the structure itself, and but little in the furnishings, and that little is chemically treated to make it absolutely non-combustible.

On this floor is also one of the finest laboratory and research rooms, fitted with every contrivance to facilitate such work.

One flight up the marble stairway is the great room mentioned before, where 68 chairs for dental work are already placed, lighted through large plate glass windows fifteen feet high, while space is available for as many additional chairs if necessity demands. Some idea of the extent of this room may be realized by the statement that nineteen tons of linoleum were required to cover the floor.

The whole establishment is for children, and the lower floor has reception rooms, waiting rooms, cloak rooms and all conveniences specially adapted to the wants of children. The big waiting room, lined, ceiled and floored with tile, has a big aquarium in the center, a library of children's books at one corner and many little chairs and tables which can be moved around at will. On the walls in Delft tile are designs illustrating childrens' legends, some of which have already been publised in this journal. They illustrate "The Dorchester Giant,," a poem by Oliver Wendell Holmes; "Rip Van Winkle"; "The Pied Piper," and "The Golden Fleece." On this floor are the assembling rooms for the dentists, both the permanent staff and the visiting professionals. There is a sterilizing room where each of the 1,000 sets of dental instruments is sterilized after use.

The cost of the structure and its furnishings, together with the endowment to continue its mission in perpetuity, is between three and four million dollars; and all this benevolence is due to the broad, philanthropic spirit of one family, connected with the manufacture of rubber, in one of the oldest establishments of this industry in the world.

A TIRE-MAKING MACHINE COMPANY INCORPORATES.

The Dickinson Tire & Machine Co. has been formed at Indianapolis, to manufacture a tire-making machine and probably later to manufacture tires. The machine is the invention of Fred. S. Dickinson, who has been for a number of years connected with the tire trade, and the plans of the company —which has an authorized capital of $1,000,000—provide for the licensing of the machine to tire manufacturers as well as for its manufacture. Horace C. Stillwell, of Anderson, Indiana, is president of the company; Fred. S. Dickinson, vice-president, and Stoughton Fletcher, secretary-treasurer.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

BUSINESS isn't exactly in the doldrums, but—if the paragram is permissible—it isn't exactly busy-ness. Like the general run of trades, we are feeling the results of the almost universal stringency. Then again, many branches of the rubber business are affected by weather conditions, and it doesn't require a report of any meteorological bureau to prove that New England has been basking in beautiful sunshine ever since last August, until a week ago; and makers of rain-coats and rubber footwear have been so mournful that even the heavy storms of the last few days haven't coaxed a smile on their features. However, automobile supply dealers claim that the fine fall weather has facilitated the wearing-out of tires, and that this has helped their trade. Makers of mechanicals are not over busy, and the druggist sundry people report fair trade. But every rubber man hereabouts is looking for good business from now on, with a reasonably active boom anticipated early in 1915.

Large amounts of money made in the rubber business are being used for the amelioration of mankind, and for the benefit of the public. The Forsyth Dental Infirmary, opened last month—a report of which will be found elsewsere in this number—is one of the institutions which bear out this statement. Almost across the street is the great addition to the Museum of Fine Arts, to be opened in January, which is a memorial to the late Robert Dawson Evans, and donated by his widow. Perhaps of far greater philanthropic importance is the Robert Dawson Evans Memorial Department of Clinical Research, which, beside what its name implies, gives each year a series of public health talks. More than 5,000 persons have attended these talks at the beautiful building in the hospital district, and this winter and spring the course will consist of almost weekly lectures on health subjects by leading specialists in the topics selected. The institution is doing great practical work in thus educating the public in the cause, prevention and cure of diseases and the preservation of health. Surely this is a splendid way to give back to the people some of the profits made in the rubber business.

* * *

The Franklin Rubber Co., which is now at 105 Summer street, will soon remove to 134 Federal street, in the new Federal Building, where it will occupy a deep and spacious store on the ground floor. At present the fixtures are being installed, and it is expected that the company will be in its new quarters early in December.

* * *

The Needham Tire Co. is the title of a concern which has recently been incorporated under the Massachusetts law, with an authorized capital stock of $350,000. It is intended to manufacture automobile tires and inner tubes at a factory it has secured in Needham. It is stated that the company has assurances of a definite market for a large output. The president is Mr. John S. Patterson, formerly with the Revere Rubber Co., and more recently president of the Patterson Rubber Co. of Lowell.

* * *

Frederick T. Ryder, well known in the rubber footwear trade, is now with the Revere Rubber Co. of this city and Chelsea, where he is giving his attention to the rubber sole and heel department. Mr. Ryder's interest in the rubber business dates back to the time when he was secretary for Deacon Converse, of the Boston Rubber Shoe Co. Later, with the United States Rubber Co., he became acquainted with the shoe wholesalers and rubber footwear distributers throughout the country. A few years ago he became general sales agent for the Apsley Rubber Co., of Hudson, this state. The Revere company is now making the "Spring Step" rubber heel, and also a line of rubber soles for leather shoes.

and a line of combined leather and rubber soles. Mr. Ryder will probably confine his activities, for the present, to forwarding the sale of these specialties.

* * *

Rubber soles are being used to a greater extent than ever before by New England shoe manufacturers. It is estimated that one million pairs of rubber-soled shoes will be manufactured in Lynn alone this season. Brockton, Haverhill, Auburn and other leading shoe centres are using proportionally large amounts of rubber soles, and manufacturers of these goods are rushing. There are also many soles used which have rubber as a component part, fibre, leather, etc., being used in greater or less proportions. Among the recent additions to this class of manufactures is the "Comporub Gum Fibre Sole," made by the Clark Rubber Manufacturing Co., of Franklin, Massachusetts.

* * *

Friends of N. Lincoln Greene of the American Rubber Co. of Cambridge, are congratulating him on the advent of a daughter, born Saturday the 14th of November.

* * *

N. P. James, of the Boston office of the Firestone Tire and Rubber Co., is to wed Miss Freda Phillips, of Dorchester. The engagement was formally announced last month.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE business of the Akron rubber companies seems to be in a healthy condition, and to have been less seriously affected by the war than was at first anticipated. Several of the larger concerns have lately declared dividends at the usual rate, and others report that the past year has been one of unusual success.

The Miller Rubber Co., for instance, whose annual meeting of stockholders was held November 12, reports in a statement of business for the fiscal year just ended: "It has been our banner year. Sales were over two and a half million dollars, and the net profits, after allowing for depreciation on buildings, machinery and tools, and crude and finished material, together with paying 7 per cent. dividend on the preferred stock, and 10 per cent. on the common stock, were increased to $528,000. The net earnings were about double those of the previous year, or 40 per cent. on the average stock liability for the year. We are adding 1,000 horse power to our power plant, and 75,000 additional feet of floor space, which will give us a floor area of six and one-half acres."

The following officers were re-elected: President, Jacob Pfeiffer; vice-president, C. T. Grant; treasurer, F. B. Theiss; secretary and assistant treasurer, William F. Pfeiffer. These officers, with J. M. Doran, comprise the board of directors.

* * *

The manager of the truck tire sales department of The B. F. Goodrich Co., S. V. Norton, made an address at the Motor Truck Convention held in Detroit recently, which was received with much interest. The subject of this talk was "The Causes and Effects of Overloading and Overspeeding in the Truck Tire Field," being a discussion of tire abuses, their cause and their effect on the wear and life of the tire. The Goodrich company has prepared a list of folders dealing at length with the common causes of tire abuse and with the remedies. These are intended for free distribution either from the Akron office or branches.

* * *

A reorganization of the Star Rubber Co., of this city, has been effected, the entire assets of the business being purchased at receivers' sale and all obligations assumed by the new concern. The officers of the company as reorganized are: President, George W. Carmichael; vice-president, J. W. Miller; treasurer, W. E. Wright; secretary and general manager, E. M. Caldwell. The superintendent and sales manager, M. B. Clark and G. E. Hall, were associated with the old organization, while Mr. Caldwell, the manager, was for several years sales manager of the drug sundries department of the Miller Rubber Co. The company has arranged for a number of new distributing agencies in the United States and abroad, and reports that, while general business is somewhat dull, orders in hand are sufficient to keep the factory in full operation, and that prospects are exceptionally bright.

* * *

A considerable amount has been raised for the relief of the Belgians. George D. Bates, vice-president of the First-Second National Bank, is chairman of a committee of eight Akron business men and manufacturers engaged in raising funds for this purpose. Three members of this committee are F. A. Seiberling, president of The Goodyear Tire & Rubber Co.; C. B. Raymond, of The B. F. Goodrich Co., and A. Adamson, of the Adamson Machine Co. This committee came into being through the activities of Mr. Ernest E. Buckleton, president of the Northwestern Rubber Co., of Liverpool, who has long been a personal friend of Mr. Bates and who recently visited Akron in the interest of this fund.

* * *

The Gregory Rubber Co., one of Akron's smaller but thriving rubber concerns, which makes a specialty of toy balloons for advertising purposes, will move about December 1 to 144 North Union street. The demands of increasing business have necessitated this move, and in its new home the company will have three times its former floor space, with double its old capacity. A line of rubber novelties for advertising, souvenir and premium purposes is soon to be added to the factory output.

* * *

The Goodyear Tire & Rubber Co. has just closed a very successful season, its sales for the fiscal year just ended being reported as 35 per cent. in advance of those of the previous year.

The sales convention held by this company from October 29 to 31, and which received brief mention in the November number of THE INDIA RUBBER WORLD, was attended by about 500 salesmen and branch and district managers. Following the usual procedure in such events, visits were made to the factory and addresses were made and discussions entered into on subjects particularly pertinent to the promotion of sales. Among the speakers at the convention were F. A. Seiberling, C. W. Seiberling, W. E. Palmer, H. S. Quine and W. D. Shilts—all officials of the company—C. H. Carlisle, of the Goodyear Canadian company, and C. C. Hopkins, of Lord & Thomas. Three special trains brought these representatives to Akron, and one feature of their visit which made a distinct impression upon the residents of the city was the parade from the hotel, across the city, to the Goodyear plant. The California representatives brought along as a mascot a real live bear, which attracted considerable attention ambling along in the procession; the men from the Chicago district were made up as minstrels, and the Southerners were in costume suitable to the climate of the South.

Of the 500 acres of land purchased two years ago by this company for the purpose of building homes for its employes at moderate cost, about 100 acres have so far been improved, divided into 432 lots of 50x100 feet and over. The 111 homes built about a year and a half ago have all been sold, building operations have been continued, and many lots have been purchased for homes to be erected next year. A block of 5 acres is to be laid out for an athletic field, and another of about 28 acres is to be devoted to a park system, probably to be later turned over to the city. Schools and churches have also been provided for, and the sale of intoxicating liquors within this district is forbidden.

* * *

The Akron Auto. Show will be held in the new O'Neil Building, at the corner of Church and South Main streets, from December 12 to 19.

Mr. Holcomb, of the Kelly-Springfield Tire Co., is able to be back at his office after a continued and severe attack of inflammatory rheumatism.

C. N. McCreery, of Akron, has been appointed assistant manager of the Western district of the Goodyear Tire & Rubber Co.

C. A. Dunham is in charge of the sales of the Cleveland territory of The B. F. Goodrich Co.

* * *

Frank J. Breiner, for 25 years an employe of the Whitman & Barnes Co., of this city, died November 16 in Winterhaven, Florida, after a brief illness. He was born in Akron in 1856. He is survived by his wife and three children.

William Smith, manager of the National Tire & Rubber Co., of East Palestine, Ohio, died at his home in Salem, Ohio, November 17, of heart disease, at the age of 54 years.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE past month has witnessed a gradual, though possibly slow improvement in the general conditions in the local rubber situation. More operatives have been called into the factories because of additional orders, and the restoration of confidence and the normal effect of approaching winter on footwear goods. The most noticeable effect, however, was attributable to the lowering price of crude rubber to a considerable extent, due to the destruction of the German commerce destroyer "Emden" and the bottling up of the "Koenigsberg." Immediately following this news being received, there was a decided lessening on the tension which had controlled the market, and local factories were assured of the stock necessary to complete orders, or to meet future demands. Whereas there were only about 50 per cent. of the rubber workers throughout the State under pay at the beginning of November, the close of the month finds upwards of 65 to 70 per cent. employed, with promising prospects of many more joining the active ranks in a short time.

* * *

Among the concerns in this vicinity that have been directly benefited by the European war is the Atlantic Tubing Co., Knightsville, through the demand for its flexible metal tubing. The largely increased orders for these goods, which heretofore have been largely imported from Germany, has resulted in this department of the plant being operated evenings, with prospects of a continuance of night work for an indefinite time. Much secrecy is maintained by the company, not only as to the methods used in the manufacture of this flexible tubing, but also in regard to the machinery used and the destination of its large shipments.

* * *

The affairs of the Walpole Tire & Rubber Co. continue to have special interest in this vicinity through the close connection with the suspended Atlantic National Bank of this city; in fact the claims of the Atlantic bank are among the heaviest liabilities of the Walpole company. At a recent hearing on the claims of the Atlantic bank before the special master, Emory J. Gibbs, at Boston, who was appointed to hear claims against the Walpole company, the amount accredited to the bank was considerably increased. The hearing was held on the motion of the counsel for the receivers of the Walpole company, who wanted the claim of the Atlantic bank cut down about $3,000. Counsel for the bank, however, made a counter-motion that the claims of the bank against the Walpole company be increased by $2,500. Later the receivers of the Walpole company withdrew their motion that the claim be decreased, and consented to allow the increase asked for. This means that the Atlantic National Bank now has a claim against the Walpole Tire & Rubber Co. amounting to $168,000.

* * *

The manufacture of carriage cloth at the factory of the International Rubber Co., at West Barrington, is up to the average of the busiest season of the concern. There are plenty of orders on hand, and to fill these contracts it is found expedient to operate a portion of the calendering department at night. There is said to be work enough for several months in sight.

* * *

A number of important changes and improvements are being made at the factory of the National India Rubber Co., at Bristol, which means increasing by a large quantity the production of lawn tennis shoes. The plans call for a considerable outlay of money, but the indications are that with the tennis shoe industry of the United States Rubber Co. concentrated at Bristol, the activities at that plant will be materially increased. During the month several changes have been made in tennis lasts.

A new storehouse is being arranged in the center of the plant, a three-story building formerly used in connection with the packing department being utilized in the improvement. A new brick structure is being erected at the north end of the factory to connect the new machine room with the next building, which is used as a stitching room.

Among the wealth of floral tributes at the funeral of Miss Beatrice Colt, daughter of United States Senator LeBaron B. Colt, and niece of Samuel P. Colt, president of the United States Rubber Co., was a massive standing wreath and base made of orchids, lilies-of-the-valley, and pink roses, which was sent by the 2,000 employes of the National India Rubber Co. It was about seven feet in height. A large and beautiful basket of pink roses was sent from the officers and salesmen of the company, and a large standing wreath and base of roses and other flowers by the clerks in the office.

Col. Samuel P. Colt has recently purchased two estates at Poppasquash, which he intends to improve and add to his holdings in the vicinity of Mill Gut, which the land adjoins. One estate contained more than twenty acres and the second about twelve acres.

* * *

Among the nearly 2,000 individual firms and corporations to affiliate themselves with the Providence Chamber of Commerce during the membership campaign, recently held, were Hope Rubber Co., the Hayward Rubber Co. and the Davol Rubber Co. Other concerns were previously enrolled in the membership list.

* * *

The Revere Rubber Co., of this city, the local factory of the United States Tire Co., has been operating its plant overtime for several weeks because of large orders received from the several countries that are banded together in the great struggle against Germany and Austria-Hungary, and expects to be favored with many more large contracts. Harlow W. Waite, the local manager, has recently been in New York in this connection, and states that a number of large shipments of automobile trucks and solid tires for the Allies in Europe are now being contracted for, one including 6,000 solid tires being for practically immediate shipment. This, it is claimed, is too large for one concern to handle in the short time allowed before the delivery must be made. As large shipments have already been made from the Revere factory here, the solid tire department having been working overtime for a considerable period, Mr. Waite states that he expects the local concern will get a good-sized third of the order.

* * *

A creditors' petition in bankruptcy was filed in the United States District Court, in this city, on October 26, against the Cataract Rubber Co., having an office on Exchange street, in the National Exchange Bank Building. Robert S. Emerson was appointed receiver for the estate by order of Judge Arthur L. Brown. It is alleged in the petition that the company

admitted in writing its inability to pay its debts. The petitioning creditors, with the amounts claimed due, are as follows: Manhasset Manufacturing Co., $3,432.07; Frank A. Cushing, $259.50, and Blackstone Webbing Co., $479.13. The Cataract Rubber Co., it is stated, is not connected with, and should not be confused with the Cataract Tire Co., at 49 Broad street, this city.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

THE rubber trade in this city has been in a rather uncertain condition for the past month. In some respects general business conditions have been favorable; in others they have been adverse. The situation in the Far East has been subjected to close and constant scrutiny by the trade here. The rubber men realize that they must look in this direction for price conditions, and they are gauging their own plans by developments in that quarter.

Word of the sinking of the German cruiser "Emden" in eastern waters recently caused a much easier feeling in the rubber trade here, not because of any sentiments which might be classed as unneutral, but because this elusive man-of-war had been raising havoc with rubber shipments out of Singapore and other eastern ports.

The mild weather has not been good for the rubber clothing trade, and dealers handling these articles are in no better position than they were a month ago when the situation was given a canvass. They are certain that real winter weather, with plenty of snow, rain and slush, will cause a rapid improvement in the situation, and they are also sure that such conditions cannot be far away.

* * *

The capacity of W. H. Salisbury & Co., Inc., of 105 South Wabash avenue, this city, was put to a sharp test one day recently when representatives of the Union Stockyards & Transfer Co. placed with them an order for 20,000 feet of rubber hose of a specified size to be ready for delivery within 24 hours, all cut into various designated lengths. The stockyards had been closed on account of the hoof and mouth disease among the cattle, and this hose was needed to comply with government orders, which were to disinfect every inch of the pens, including the fences, posts and pavements.

"There was a brief discussion," said Richard H. Geier, general manager of the company, "and we decided that by keeping the entire force on the job the greater part of the night we could fill the order in the time required. I say with pride that all of the boys and some of the girls in our establishment volunteered for the work with great enthusiasm, and an hour before the stated time we were ready with the hose, cut into the proper lengths. We felt that it was more or less of a patriotic matter to use our best efforts in assisting to stamp out this dread disease, which threatened for a time to seriously cripple the cattle industry in the West."

* * *

Most of the repair work in the grain elevators is over for the present and there is not the same amount of activity in the rubber belting lines that there was a few weeks ago. However, the strain placed upon some of the northwestern elevators in handling the great grain crop has resulted in more than the usual number of hurry orders for equipment.

* * *

Considerable discussion has been created among the mechanical rubber men of the city by an announcement that the price of narrow rubber belting containing cotton is soon to be increased. There is little doubt in the minds of the local dealers that the cost of a narrow belt is considerably more than half that of a belt twice as wide; the proportion is nearer two-thirds, in the estimation of mechanical rubber men of this city. Therefore the change will meet with little protest from this quarter.

* * *

Rubber men here were enthusiastic on hearing early this week of the plan which had gone through at the trade meeting of representatives of commercial organizations held at Memphis, Tennessee, to establish branch banks in South American countries for the encouragement of commerce with the United States. This means that it will be possible for rubber manufacturing firms in this country to establish trade with dealers in the southern continent. The Chicago Association of Commerce was represented at the meeting in Memphis, and the rubber men of the city who belong to that enterprising body have taken a keen interest in the proceedings. Establishing banks is the first move in the campaign. It is believed that it will be possible, now that competition is less keen, owing to the war, to build up a satisfactory trade out of Chicago. The route will be by rail to New Orleans, and from that point by steamer down along the eastern coast or through the Panama Canal along the western seaboard. The cost will not be much greater than on shipments to points in California under the present rates on roads running west out of this city.

A. Romain, the sales manager of the Quaker City Rubber Co., which manufactures mechanical rubber goods, discussing the situation, said: "In a business like ours we must look at matters in a broad light, otherwise we cannot get the right perspective. I regard the establishment of the Federal Reserve Banking System as one of the most encouraging things that has happened to the rubber trade of this city in some time. The city has been made the center of one of the big reserve banks, and that is bound to attract and stimulate capital for all commercial enterprises to this point."

* * *

Manufacturers of pianos and piano player actions in this city have put up a cry of distress on account of a feared shortage in the particular grade of rubber tubing which they use in the manufacture of their product. They have been paying advanced prices without much complaint, and their fears were excited by a letter sent out by a prominent supply house stating that an unfavorable turn of affairs in the eastern theater of war might result in the complete depletion of the supply of rubber available for the manufacture of rubber tubing. The tubing used by the piano men must be of a certain fine quality; no other kind will do. In the manufacture of player actions large quantities are used, as it is necessary, on account of the bellows device, to have conduits which will conduct the compressed air to the points where sound is produced. Large manufacturers of player actions in this city are the Gulbransen-Dickinson Co., the Sonorus Piano Player Co., and the Schubert Piano Co., the last named concern also having an office in New York.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

AS a manufacturing center Trenton has come to be recognized as one of the most important of the cities of the east, and its lines of production are both varied and extensive. The manufacturers of the city are co-operating with the local Chamber of Commerce for an exhibit of Trenton products at the Panama-Pacific International Exposition, which opens in San Francisco, February 20 next, and this display will probably give further recognition to the city and its industries. There will be a "Trenton Day" at the exposition, extensively advertised. The space allotted to the Trenton section is close to the Court of Honor, in the Palace of Manufactures. Among the rubber companies that have so far contracted for space are the Home Rubber Co. and the Essex Rubber Co. The exhibits are now being prepared and collected at the Second Regiment Armory, where they will be on display from

December 7 to 15, immediately after which they will be shipped to San Francisco. The proceeds from admission to the San Francisco exhibit will be contributed to the National Red Cross fund for the relief of European war victims.

* * *

No work in this city of industries is being carried on more industriously at present than that of collecting funds and supplies for the relief of the Belgians. The ruthless invasion of this peaceable country and the wanton destruction of life and property, with the consequent hardships entailed on survivors, have aroused universal sympathy, which is being expressed in the practical form of donations to assist in relieving these sufferings. The Belgian relief work here is well organized. Committees have been appointed in every line of industry to solicit and receive contributions. Clothing has been collected by the women's committee, and two large boxes of warm clothes were forwarded to Liverpool in care of Ernest E. Buckleton, of the Northwestern Rubber Co. of that city, who visited Trenton a few weeks ago in the interest of Belgian relief. The rubber mills' committee consists of A. Boyd Cornell, Charles H. Stokes, Clifford H. Oakley and Cornell Murray; while Frank W. Thropp and F. W. Roebling are on the committee for iron mills, machine shops, etc.

* * *

The Braender Rubber & Tire Co., of Rutherford, New Jersey, has just put on the market a new non-skid tire. This new tread, as will be seen in the illustration, is of the combined raised and depressed type. It retains the fishtail cross bars of the original Braender "Bull Dog" non-skid, and has in addition six heavy webs of rubber so placed between these bars as to give more rubber on the tire, with more surface to take the wear. The addition of these webs overcomes the tendency to skid and in combination with the cross bars insures a continuous and smooth riding surface. The new "Bull Dog" will be exhibited at the January automobile shows in both New York and Chicago.

* * *

At the Inter-State Fair recently held in New Jersey the Essex Rubber Co. had an interesting exhibit of rubber heels and soles. One feature which attracted attention at this exhibit was a barrel full of rubber heels. Prizes were awarded for the nearest guess to the number of heels contained in the barrel. One visitor guessed the exact number, 1,896 heels, winning a first prize of $5.

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A permit has been granted the Globe Rubber Co., Trenton, for a new factory building 72 x 59 feet, two stories high.

* * *

A threat to blow up the plant of the American Rubber Co., of this city, recently made by Peter Flood, a former convict who had been refused work in the plant, was followed by the arrest and conviction of Flood, with a sentence of one year in the workhouse.

* * *

At the meeting of the Board of Managers of the Sons of the Revolution in the State of New Jersey, on November 12, Frederick F. Katzenbach, vice-president of Katzenbach & Bullock Co., Inc., manufacturers of chemicals for the rubber trade, was received to membership. Mr. Katzenbach traces his ancestry back to Lieutenant Imlay, of Monmouth County, New Jersey.

* * *

The Board of Trade of New Brunswick, in a recent advertisement, calls attention to the lack of proper housing facilities for workmen in that city. The enlargement of the India Rubber Co.'s business has brought ten new families to the city, and difficulty is being experienced in securing proper accommodations for this increase in population.

* * *

The Rutherford Rubber Co., of Rutherford, New Jersey, has moved its New York branch from West Forty-second street up to the automobile district at Fifty-second street, being now located at 1668 Broadway. This company, which manufactures the Sterling Vacuum-Bar tire, sells direct to the user, maintaining factory sales branches in the principal eastern cities.

* * *

The factory building at Harrison, New Jersey, formerly occupied by the Greenfield Engine Co., has been leased by the Auto Tire & Tread Co. for manufacturing purposes.

SOME RECENT CUSTOMS RULINGS.

The Board of General Appraisers on November 4 affirmed the classification of the customs authorities on raincoats imported by M. L. Rothschild & Co., of St. Paul and Minneapolis, as cotton wearing apparel, under the old tariff. The importers claimed classification under manufactures of rubber, on which the rate is 35 per cent. ad valorem, but the evidence showing that while rubber predominated in weight of the garments cotton was of the greater value, the 50 per cent. rate was imposed.

A decision rendered on November 5, also affirming the original customs classification, places elastic braid composed of silk and rubber threads under the classification "braids, composed of yarns, threads or filaments," on which the rate is 60 per cent. ad valorem. The protest against this classification was made by Calhoun, Robbins & Co., New York, who contended that rubber was the component of chief value in the braids and that in its condition in the braids it was neither a yarn, thread nor filament, but this protest was overruled and the contention denied.

Brooches of hard rubber, returned by the Collector at 60 per cent. ad valorem, under the act of 1897, as jewelry, have been reappraised by the Board, which classifies them as manufactures of hard rubber, entitled to enter at 35 per cent.

A SMALL TOOL FOR MAKING A WIRE CLAMP.

There are a good many places where a wire clamp if made tight and enduring is exceedingly serviceable, as, for instance, in clamping a piece of hose or fixing a blowout, in holding together a wooden pail when the hoops have grown loose or been lost and for fastening a steel spring that has become broken. R. A. Beaudette & Co., of Chippewa Falls, Winconsin, have recently put on the market a little tool called the Rab Wire Clamper which makes it possible to put a wire clamp wherever it may be needed very quickly and easily. The wire is bent in the form of a loop and put around the article to be clamped, the free ends pulled through the loop, and then by the use of this small tool, which is quite inexpensive, the wire is drawn taut and bent over and clamped and cut. The accompanying illustrations show the use of wire clamps as fastened by this tool in repairing a tire and in clamping a piece of hose. Beckley-Ralston, of Chicago, is the distributor.

News of the American Rubber Trade.

CHARLES T. WILSON CO., INCORPORATED.

ON November 1 the business of Charles T. Wilson, importer of and dealer in crude rubber at 46 Cortlandt street, New York, was transferred to the Charles T. Wilson Co., Incorporated, all unfilled contracts and obligations being assumed by the new concern. This company, of which Charles T. Wilson is president and Henry Perlish vice-president, is incorporated under the laws of New York with an authorized capital stock of $250,000, of which they state that $210,000 has been issued and paid in.

THE T. H. & B. CHEMICAL CO.

Having sold his interest in the firm of Ernest Jacoby & Co., manufacturers of rubber substitutes, with factory at South Boston, Mr. Ernest Jacoby has resigned his position as an officer of that company. The business will be continued as heretofore, under the name of the T. H. & B. Chemical Co., with offices at Hyde Park, Massachusetts, and Mr. Jacoby will continue to sell its products.

THE RUBBER RECLAIMERS' ANNUAL MEETING.

The annual meeting of the Rubber Reclaimers' Club was held at the Hotel Vanderbilt, New York, on November 5. Francis H. Appleton was re-elected president, R. W. Seabury was re-elected treasurer, and Lloyd E. Appleton was elected secretary, succeeding J. Norman. The club is in a very healthy condition and its monthly meetings for the exchange of views on the reclaiming industry are largely attended.

ANNUAL REPORT OF THE BOSTON WOVEN HOSE & RUBBER CO.

The annual report of the Boston Woven Hose & Rubber Co. shows total assets on August 31 valued at $3,710,036, or a value of $171,700 in excess of assets on the same date last year; while the surplus shows a gain of $177,869, standing at $1,460,042 in the last report, against $1,282,174 in 1913. The assets include cash and debts receivable to the amount of $913,564, and the liabilities include accounts payable $48,304, with a floating debt of $348,000.

This company has declared a regular semi-annual preferred stock dividend and a regular quarterly common stock dividend of $3 per share, payable December 15 to stockholders of record on December 5. It also declared an extra dividend of $25 a share on common stock, payable November 27 to stock of record on November 23, offering to common shareholders the privilege of subscribing to 2,500 shares of new common at par, in the ratio of one share of new for each four shares held of the old issue.

A CHANCE TO VISIT SOUTH AMERICA.

The Travelers' Department of the Fidelity Trust Co. of Baltimore has chartered the steamship "Finland" for the purpose of taking a party of manufacturers, exporters, importers, and others on a tour, lasting 106 days, of the principal ports of South America. The ship will sail from New York January 27, and from Baltimore two days later; will visit all the important ports in the southern continent, and return home by way of the Panama Canal. This trip is promoted for the purpose of giving American business men a chance to acquaint themselves with the business opportunities in South America.

WELLINGTON, SEARS & CO. SECURE GOVERNMENT ORDERS.

Government orders for about a million yards of cotton duck have recently been received by Wellington, Sears & Co., of Boston—manufacturers and exporters of ducks, sheetings, drills, etc., especially suited to the needs of the rubber trade—from the European countries now involved in war. The French government alone has ordered, through the company's agency in Great Britain, half a million yards, presumably for army purposes.

RAW MATERIAL AND THE EUROPEAN WAR.

The terrible struggle now going on in Europe, and the consequent disruption of general commercial and manufacturing conditions, has brought in its train a lesson now receiving the serious consideration of most American manufacturers—that of the danger of dependence on supplies from over sea. The attention of manufacturing trades—including rubber—is of necessity turned to the availability and extent of domestic sources of supply of a dependable and reliable character. The recent mining of the waters around the British Isles creates a situation which is likely, among other things, to have a restrictive influence on the importation of chalk, on which the manufacture of whiting is dependent, and is already affecting the market for deliveries over next year.

The Industrial Chemical Co., of 200 Fifth avenue, New York City, which for many years has been studying the requirements of the rubber manufacturing industry, has now perfected its special brand of "Alba Whiting" to such a degree as to make it a most efficient compounding material in the manufacture of rubber goods. The largely increased demand from the trade has fully justified the company's policy of expansion in erecting a thoroughly up-to-date plant under scientific management, providing a means of doubling the present output and so placing the company in a position to guarantee regularity of supplies, in anticipation of an additional demand for material entirely of American origin. Alba Whiting has been on the market for over ten years, but its use has greatly increased during the last three years. There are now over 80 rubber manufacturers who are using this ingredient in their compounding.

THE FISK RUBBER CO. MAKES A RED TOP TIRE FOR FORD CARS.

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, is making a non-skid tire with red top and white side walls for use on Ford cars. This tire is made only in sizes 3 x 30 inches and 3½ x 30 inches. The tread has additional thickness and is claimed to ride as smoothly as a plain tread and without any bump and vibration. A letter received November 13 by the Fisk company from one of its representatives in Arizona states that he had just examined a set of red tops on a Ford car used in automobile stage service through the desert that had traveled approximately 6,000 miles and looked good for fully as many miles more.

MONATIQUOT RUBBER WORKS CO. APPOINTS NEW AKRON AGENT.

The Monatiquot Rubber Works Co., from its Boston sales office at 176 Federal street, announces that James C. Baldwin, of Akron, Ohio, has been appointed agent in that state for "Naturized" Rubber, the product of the Monatiquot plant at South Braintree, Massachusetts. The company has heretofore been represented in that section by L. Y. Croft.

RUBBER COMPANY DIVIDENDS.

The Goodyear Tire & Rubber Co., of Akron, at a quarterly meeting held Monday, November 2, declared an annual dividend of 12 per cent. on the $8,000,000 common stock of the company.

The Swinehart Tire & Rubber Co., of Akron, has declared a regular quarterly dividend of 1½ per cent., payable Jan. 15 to stock of record Dec. 15.

The B. F. Goodrich Co., of Akron, has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, payable January 1 to stockholders of record on December 21.

CAPITALIZATION CHANGES.

The Star Rubber Co., of Akron, Ohio, has increased its capital stock from $100,000 to $200,000.

The Excel Rubber Co., of Akron, Ohio, has increased its capital stock from $10,000 to $30,000.

SUIT AGAINST INDIANA RUBBER & INSULATED WIRE CO. DROPPED.

The suit brought against the Indiana Rubber & Insulated Wire Co., of Marion, Indiana, by the Buffalo Specialty Co., of Buffalo, New York, to enjoin the former company against alleged infringement of rights in a tire fluid, has been dismissed in the United Stataes District Court at Indianapolis. The patent for this fluid was purchased by the Indiana concern from the inventor, and in turn sold to the plaintiffs in this action, whose complaint charged that after the sale the defendants had made fluid as covered by the patent.

MORE COMPANIES TAKE SPACE FOR JANUARY AUTOMOBILE SHOWS.

On page 82 of the November number of THE INDIA RUBBER WORLD mention was made of space having been allotted to a number of companies engaged in rubber and allied manufactures in the automobile shows to be held at New York and Chicago January 2-9 and 21-30. Several other companies have since been allotted space. These include: The Cutler-Hammer Clutch Co., Milwaukee; The Dreadnaught Tire & Rubber Co., Baltimore; the Globe Rubber Tire Manufacturing Co., Trenton; the Standard Woven Fabric Co., Framingham, Massachusetts, and the Newmastic Co., New York.

The following concerns have taken space for the New York show only: Essex Rubber Co., Trenton; Rutherford Rubber Co., Rutherford, New Jersey; the Marathon Tire Sales Co., New York—a branch of the Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio; the Steel Pneumatic Tube & Tire Co., New York; the O'Bannon Corporation, Providence, Rhode Island, and the Ashley Wire Wheel & Rim Co., New York.

DECISION AND AWARD IN WEED TIRE CHAIN SUIT.

A perpetual injunction has been issued by Judge Tuttle in the United States District Court at Detroit in the suit brought by the Weed Chain Tire Grip Co., the Parsons Non-Skid Co., Limited, and Henry D. Weed, restraining the Perry Chain & Grip Co., the Union Steel Screen Co. and the Motor Specialty Co. from the manufacture of tire chains which infringe patent No. 723,299 issued to Henry Parsons March 24, 1903. The plaintiffs in the case were awarded $18,000, to cover costs of the suit and the profits which the defendants had made from sale of devices infringing this patent.

IMPORTING FIRM ASSIGNS FOR BENEFIT OF CREDITORS.

Fred'k Probst & Co. (Adolph Vietor), trading and commission merchants, of 82 Beaver street, New York, made an assignment on November 11 for the benefit of creditors, with liabilities approximating $1,000,000. This business was established in 1845, by Probst & Memerlstaza, who were later succeeded by Fred'k Probst & Co., Mr. Vietor obtaining ownership in 1897. Included in the assigned estate are property rights in a large block of timber land in the State of Campeche, Mexico; right, title and interest in a plantation in the State of Chiapas, Mexico, and a plantation in the City of Coban, Guatemala, also a mortgage on property in the city of Vera Cruz. This assignment is said to have been caused by the embezzlement of $200,000 of the firm's funds by the general manager and cashier, William F. Bostelman, who committed suicide on November 21.

THE SOUTHERN TIRE & RUBBER CO. TO MAKE TIRES.

Another new concern about to enter the field of rubber manufacture is the Southern Tire & Rubber Co., of Augusta, Georgia, which expects to be ready to start work by about the middle of December. This company, which is capitalized at $75,000, has a new brick plant at Augusta, in the vicinity of the Armour fertilizer works. This plant—the main portion of which is 52 x 230 feet in area, and which has an addition 30 x 60 feet—with its equipment, is said to represent an outlay of approximately $70,000. This equipment has already been installed. The company purposes manufacturing automobile tires, employing from 12 to 15 workmen at the start, with a capacity of about 50 tires a day.

TRADE NEWS NOTES.

The Cutler-Hammer Clutch Co., of Milwaukee, Wisconsin, well known in most of the large American rubber factories as the manufacturer of the Cutler-Hammer Magnetic Clutch and Brake, has removed its Cincinnati office from the Fourth National Bank Building, taking larger quarters in the Gwynne Building.

A visit of inspection was recently made by representatives of the East Palestine Rubber Co. to the plant at Clyde, Ohio, formerly occupied by the General Motors Co., its suitability as a supplementary tire factory to the company's plant at East Palestine, Ohio, being under consideration.

The Superior Tubes & Accessories, Limited, has been incorporated at Toronto, Ontario, with a capital stock of $300,000, to manufacture automobile equipment, etc. The incorporators are W. A. J. Case, J. B. Taylor and C. G. Lynch, and the principal office of the company is at Toronto, 1201-5 C. P. R. Building.

By arrangements recently effected, the H. W. Johns-Manville Co., of New York, has taken the exclusive distributing agency for "Tirenew" and "Narco," products of the National Rubber Co., of St. Louis, Missouri. These products, which are rubber compositions intended respectively for coating tires and for tire filler, will hereafter be known as J-M Tirenew and J-M Narco.

According to an announcement made by the Business Men's Association of Findlay, Ohio, the newly formed Toledo-Ford Tire Co. will locate in that city, manufacturing a line of tires exclusively for Ford cars, to be sold direct to the users. The company states that it expects to be able to sell at 25 per cent. below usual price.

The Pneumatic Hub-Tire-Wheel Co. has been incorporated under the laws of Delaware, with a capital stock of $5,000,000, by L. C. Evans, G. J. Lampton and N. W. Rowland—all of Louisville, Kentucky—with the purpose of erecting a factory as soon as satisfactory arrangements can be effected.

A demand has been made upon George D. Porter, Philadelphia's Director of Public Safety, by a committee appointed by the Rotary Club of that city, for an immediate test of the fire hose in use there. In spite of assurances of Councils that the hose is all right, repeated charges have been made that the city's fire hose is in bad condition and liable to burst at any time, and the manufacturers consider it their right and a matter of importance to themselves to know that this public equipment is in first class shape.

Judge Dodge of the United States District Court of Massachusetts recently denied the petition of the Harris Raincoat Co., of Boston, for the sale of the assets of the Oxford Rubber Co., of Cambridge, Massachusetts, the receiver of the Oxford company assuring the court that he would soon present a similar petition.

The plant of the Fisk Rubber Co., at Chicopee Falls, Massachusetts, which was closed during the first week of November for annual inventory, reopened on the 9th.

The Williams Tire & Rubber Co., which recently acquired property at Vista, near McKeesport, Pennsylvania, on which to erect a plant for the manufacture of tires and other rubber goods, expects to have ready for operation by Spring a factory which will require the services of 500 workmen. Work on this new plant is very soon to begin. A. D. Williams, president of the company, of Glassport, Pennsylvania, is quoted as stating that $60,000 of the new $255,000 stock issue of the company—formed last September—has already been subscribed for.

A convention of the sales force of the Standard Woven Fabric Co. was recently held at the company's factory at Framingham, Massachusetts. A convention address by the general manager, Mr. Burdick, discloses a very satisfactory business for the past year, the sales of "Multibestos" brake lining during that time having doubled.

NEW INCORPORATIONS.

Atlantic Rubber Co., October 22, 1914; under the laws of Delaware; authorized capital, $250,000. Incorporators, E. C. Boyd, Norman P. Crouch and Horace J. Joslyn—all of Wilmington, Delaware. To manufacture and deal in the products and by-products of rubber.

Brazilian Rubber & Manufacturing Co., October 30, 1914; under the laws of Illinois; authorized capital, $5,000. Incorporators, Edward Graff, Simon La Grou and William E. Rafferty. Principal place of business, 105 West Monroe street, Chicago, Illinois. To buy and sell at wholesale and retail, rubber clothing and general merchandise.

Cut-Rate Tire Co., The, October 1, 1914; under the laws of Tennessee; authorized capital, $3,000. Incorporators, P. J. Quigley, A. N. Sullivan, R. J. Quigley, J. G. Weatherford and V. G. Peace. To buy, sell, exchange, repair and otherwise engage in the automobile tire business.

Hood Tire Co., November 3, 1914; under the laws of Massachusetts; authorized capital, $20,000. Incorporators, Charles W. Dailey, Jr., Robert Muir, Herbert E. Rose, Herbert C. Mason and Edward I. Aldrich—all of Watertown, Massachusetts. To deal in tires, rims and wheel equipment for motor or other vehicles.

Humphrey-Kennard Co., The, October 19, 1914; under the laws of Ohio; authorized capital, $10,000 divided into 100 shares of $100 each. Incorporators, J. R. Humphrey, Floyd E. Waite, Chas. A. Colvin, E. G. Hoag and L. M. Sewell. To buy, sell and deal in rubber tires, etc.

Lyon Tire & Rubber Co., October 15, 1914; under the laws of Illinois; authorized capital, $10,000. Incorporators, A. W. Lemke, LeRoy Harriss and W. B. Lathrop. To manufacture, buy, sell and exchange automobile tires, tubes and other automobile accessories.

Mattson Rubber Co., November 12, 1914; under the laws of New Jersey; authorized capital, $200,000. Incorporators, John Behrens and John Henry Behrens—both of Hasbrouck Heights, New Jersey—and Henry Lemmermann, Bronxville, New York. To acquire, sell, trade, deal in and with rubbers and rubber goods of all kinds, including automobile tires, inner tubes, etc.

Mohawk Supply Co., The; September 30, 1914; under the laws of Ohio; authorized capital, $2,500 divided into two hundred and fifty shares of $10 each. Incorporators, F. F. McGinness, William Hartman, C. P. Bidinger, F. J. Rockwell and G. B. Owens. The principal place of business is Akron, Ohio. Jobbers and retailers of rubber goods and supplies.

Needham Tire Co., October 22, 1914; under the laws of Massachusetts; authorized capital, $350,000. Incorporators, John S. Patterson, Cambridge; James M. Patterson, Winchester; William H. Burgess, Howard W. Lang and W. Louis Williams—of 50 State street, Boston—all in Massachusetts. To manufacture and sell automobile tires and inner tubes.

Non-Pneumatic Suspension Tire Co., The; October 14, 1914; under the laws of Ohio; authorized capital $10,000, divided into 100 shares of $100 each. Incorporators, Anthony Schemel, George Wehrfritz, F. H. Goosmann, C. W. Mackenbach and H. Serkowich. Principal place of business Cincinnati, Ohio. To manufacture automobile tires, rims and acessories.

Penn Rubber Traffic Co., November 9, 1914; under the laws of Delaware; authorized capital, $150,000. Incorporators, William Boyd, W. I. N. Lofland and W. F. P. Lofland—all of Dover, Delaware. To manufacture and deal in automobile tires and inner tubes, rubber sundries, etc.

Penn Square Tire Reclaiming Co., The; October 23, 1914; under the laws of Ohio; authorized capital, $10,000 divided into 100 shares of $100 each. Incorporators, L. H. Heller, Otto A. Erb, Jos. F. Krajewski, I. Grafer and Nathan Herstamm. To manufacture, buy and sell, at wholesale and retail, automobiles, automobile accessories and supplies.

Pneumatic Hub-Tire-Wheel Co., October 22, 1914; under the laws of Delaware; authorized capital, $500,000. Incorporators, G. J. Lampton, N. M. Rowland and L. C. Evans—all of Louisville, Kentucky. To erect manufactories and workshops for the manufacture of automobile wheels and tires.

Safety Signal Co., Inc., October 27, 1914; under the laws of New York; authorized capital, $200,000. Incorporators, Arthur W. Dennen and Stanley C. Fowler—of 19 Cedar street—and Rebecca Hilliker, 80 Maiden Lane—all in New York City. To manufacture devices for automobiles, rubber goods, etc.

Safety Tread Co., Inc., The; November 13, 1914; under the laws of New York; authorized capital, $20,000. Incorporators, Paul P. Crosbie, 29 Broadway, James A. Edwards, 32 Liberty street—both of New York City—and Raymond E. Hartley, Mountain View, New Jersey. To manufacture rubber stair treads, etc.

Sponge Rubber Inner Heel Co., October 23, 1914; under the laws of New Jersey; authorized capital, $25,000. Incorporators, Albert Ensor, Sr. (president and treasurer), and William J. Broidy—both of Paterson—and W. Beebe Price (vice-president), West Nutley—all in New Jersey. To manufacture and sell detachable ventilators for boots, and the like, and to purchase and deal in all materials necessary for their manufacture.

Standard Tire & Rubber Co., November 10, 1914; under the laws of Delaware; authorized capital $250,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin and S. C. Seymour, of Camden, New Jersey. To buy, sell and manufacture all articles necessary to, or used in the management, running and operating of automobiles.

Tator Co., Inc., Arthur R., October 28, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Arthur R. Tator, 1051 Prospect Place; Hugh F. Foster, 617 McDonough street, and John F. Undutsch, 1051 Halsey street—all in Brooklyn, New York. To deal in autos, tires, etc.

Traver Puncture Proof Tire Co., Inc., November 9, 1914; under the laws of New York; authorized capital, $400,000. Incorporators, Gustave Koening and Lena Koening—both of 10 Mott avenue—and Philip C. Traver, 6 Pearl street—all in Far Rockaway, New York. To manufacture tires, etc.

United Supply Stores, Inc., November 6, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Arthur S. Stein, 197 Palisade avenue, Jersey City, New Jersey; Louis G. Duquet, 107 West Thirty-sixth street, and Arthur W. Chatfield, 312 West Fifty-second street, New York City. To deal in tires, rubber goods, auto accessories, etc.

TRADE NEWS NOTES.

On December 1 the Rubber Trading Co. moved its office in New York City from 38 Murray street to 9-15 Murray street.

Contracts have been let for an addition to the factory of the Farrel Foundry & Machine Co. at Ansonia, Connecticut.

The Kansas "Pure Shoe" law, which was passed by the legislature in 1913, to become operative on April 1 last, has been declared constitutional by Judge A. W. Dana of the District Court at Topeka in that state. A suit to test the legality of this act was brought on petition of the Payne Shoe Co. of Topeka, in behalf of abou 450 shoe retailers who are members of the Kansas Retail Shoe Dealers' Association.

A Customs House report on merchandise in bonded warehouse on the first of November contains the following details regarding chicle: Value in bonded warehouses within the District of New York, November 1, 1914, 266,115 pounds, valued at $94,257, against 105,328 pounds, with a value of $33,358 on November 1, 1913. The quantity in bond on October 1 was valued at $103,629.

A. G. Spalding & Brothers, sporting goods manufacturers, have commenced work on an addition to their factory at Chicopee Falls, Massachusetts. The promotion of this work was delayed owing to the war, but present demands have shown the necessity for immediate increase of capacity.

WILMER DUNBAR.

MR. DUNBAR is not so very old—in fact he is only a few weeks beyond the forty-five-year mark—but he has had a variety of experience in the rubber industry which few men would secure even if they lived to the ripe age of Methuselah. If there is any doubt upon this point the details given below will dissipate it.

Mr. Dunbar was born in Johnsonville, Pennsylvania, in 1869 and while still a boy picked up a good deal of information regarding the pottery industry, then quite flourishing in that town. When he was fifteen he went to Trenton, New Jersey, hoping to get work in a pottery factory, but as he found no work of that character he looked about and soon got a position with the Star Rubber Co. The general manager took an unusual interest in the industrious country boy and assigned him to work in practically every department of the factory, so that at the very start of his rubber career he secured a wide range of information. When, in 1886, the Knights of Labor started a strike against this company, young Dunbar was one of the few who remained loyal. He stayed with this company for six years, leaving it in 1892 to go with the newly organized Eastern Rubber Manufacturing Co., now known as the Hamilton Rubber Manufacturing Co.

WILMER DUNBAR.

Here he remained until 1896, when he cast in his lot with the Diamond Rubber Co., then a $50,000 corporation. He was made superintendent of its mechanical department. In the following year he installed a rubber department for The Whitman & Barnes Manufacturing Co. and became its first general superintendent. Two years later he was one of three men who organized the Alden Rubber Co., becoming its vice-president and general manager. After five years in this position he joined the Pennsylvania Rubber Co., as factory manager and general superintendent, and while in this position organized and equipped the Westmoreland Rubber Manufacturing Co. and, as its general manager, operated it very successfully in the production of reclaimed rubber. In 1909 he left these two companies and during the next three years was a general consulting expert and in that capacity built several reclaiming plants.

Early in 1912 he joined the McGraw Tire & Rubber Co. for the purpose of doing certain reorganization work, and having accomplished his purpose he retired after a few months and became identified with the East Palestine Rubber Co., of East Palestine, Ohio. While retaining his connection with this company, he organized, in February, 1913, the Greensburg Tire & Rubber Co. for the manufacture of inner tubes at Greensburg, Pennsylvania; and still later he became identified with the Dreadnaught Tire & Rubber Co., of Baltimore, Maryland, building and equipping its plant for the manufacture of automobile tires. He is at present associated with the three companies last named, being president of the East Palestine company, vice-president and general manager of the Greensburg company and also vice-president and general manager of the Dreadnaught company.

Notwithstanding all his wide experience in the manufacture and sale of rubber goods and the financing of rubber industries, Mr. Dunbar's chief pride is in his ability as a rubber compounder.

Incidentally it might be mentioned that amid all these varied activities Mr. Dunbar found time, in May, 1890, to get married—to Miss Florence M. Peters, of Trenton. Evidently three is his favorite number, for he not only has the management of three different rubber companies, but he is the father of three boys and three girls.

PERSONAL MENTION.

Harvey S. Firestone, president and general manager of the Firestone Tire & Rubber Co., of Akron, recently subscribed for $20,000 worth of second mortgage bonds of the Detroit Athletic Club. This organization, which has built a fine new club house, put $60,000 worth of mortgage bonds on the market, $40,000 of which were purchased by members and others interested in its success.

Frank Venn, the well known manufacturer of rubber footwear marking devices, has recently returned from a tour of Europe, where he was extremely successful in placing his machines. Mr. Venn also manufactures a marking ink in a variety of shades which he is sending to all parts of the world.

H. E. Taylor has been placed in charge of the branch which the Gibney Tire & Rubber Co., of Conshohocken, Pennsylvania, has opened at 1712 Michigan avenue, Chicago.

The United States Tire Co. has appointed Thomas Wilkinson manager of its Los Angeles branch. He is well acquainted with the trade of Los Angeles, having been associated in that city with the Hartford Rubber Works Co., before becoming manager of the San Francisco branch of the United States Tire Co.

Mr. Jesse Hawkins, who has been connected with the New York office of the United States Rubber Co. for a number of years, has just been appointed general manager of the Standard Rubber Shoe Co., of Chicago, succeeding Mr. Burt in that position. Mr. Hawkins starts on his new duties December 1.

C. W. Heintz, who, on the resignation of B. F. Morris, was appointed manager of the Buffalo branch of the Republic Rubber Co., of Youngstown, Ohio, has been for the past five years connected with the company's sales office in New York.

R. W. White has been succeeded in the management of the Columbus, Ohio, branch of the Goodyear Tire & Rubber Co. by W. W. Magill, Mr. White having been promoted to the Chicago branch management.

L. M. Bourne has been appointed manager of the factory of the Double Fabric Tire Co., at Auburn, Indiana. Mr. Bourne was for six years associated with the Goodyear Tire & Rubber Co., as assistant production manager and in charge of the laboratories of the experimental department.

Charles L. Benjamin, advertising manager of the Cutler-Hammer Clutch Co., of Milwaukee, Wisconsin, was the guest of honor and principal speaker at a meeting on October 7 of the Advertisers' Club of Milwaukee. His subject was "Business Building Through the Business Press."

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

CAPTURE OF GERMAN TRADE.

THIS subject I note is attracting considerable attention in America as well as in England, and it is obvious that the two countries are engaged in serious, albeit friendly, rivalry. As THE INDIA RUBBER WORLD is quite open as to America's aims and aspirations there is no reason why I should not be equally frank in referring in a general way to what is being done or aimed at on this side. One principal difficulty seems to lie in the objection to imitating German methods, with regard to which situation we have been brought to task time after time by our consular service. I refer more particularly to the employment of travelers speaking foreign languages, the issue of price lists in the language and currency of the foreign countries, the supply of cheap qualities where better goods are not desired and better credit accommodation. Whether the business is worth having when these points are considered is a matter on which much doubt exists in the minds of individual manufacturers, and it is they who have to decide, as, although the Board of Trade is very active at present in its Intelligence Department, this activity extends no further than the obtaining and pa sing on of information.

One of the latest bulletins issued by the board relates to the export trade of Germany and Austria-Hungary in rubber goods in neutral markets. This shows that the maximum amount of trade which might be diverted to British manufacturers from their German and Austrian rivals amounts to £870,000 ($4,350,000) in the United Kingdom market and £2,819,600 ($14,098,000) in Colonial and neutral markets. These figures, I must add, do not include machinery belting, toys and tires for motor cars, motorcycles and bicycles. It is said that 75 per cent. of the solid bus tires used in London are of German make, showing what an important opportunity exists for the expansion of British trade. It would be interesting to know what is the state of affairs in the large German towns with regard to British tires—probably it is much more in favor of the home country.

On a previous occasion I referred to steam jointing material such as Klingerite as a material which had been largely imported from Austria and Germany. Special efforts are now being put forth to make this in England. The difficulty, however, is the general lack of knowledge of the details of manufacture. I have seen two or three advertisements lately for foremen who know the details required, but I don't suppose it will prove easy to get them. Even if such advertisements penetrated to the Continent and caught the eye of some workman not "called up" the odds are that if he managed to land in England he would speedily find himself in an alien enemy detention camp. It seems difficult for the general business man to understand that the knowledge of how to make this, that or the other is not universal nor is it often to be acquired from text books. Many people seem to think that, given capital and better banking facilities, we can forthwith if we choose make for ourselves almost everything in manufactures that have hitherto been imported. They overlook the fact that many goods are made behind closed doors and that the details of manufacture are by no means common property. I don't know the exact position of the American works with regard to this article, but, of course, they have long been to the fore in steam packing material made otherwise than with sheet asbestos as a base.

With regard to the rubber toy branch, I have not heard of any active steps being taken by our rubber manufacturers, and it is noteworthy that the Hammond Toy Manufacturing Co., Limited, brought out in London in October, announces that at present it does not propose to make rubber toys.

THE WAR AND RECLAIMED RUBBER.

The fact that reclaimed rubber and scrap have been lumped with raw rubber on the conditional contraband list has naturally been a blow to reclaimers, as a good deal of business is usually done with Germany. Strong representations have been made to the customs and excise authorities with a view to the obtaining of licenses where the buyer in a neutral country guarantees that the reclaimed will not leave his works. The matter has been before the Privy Council, but the decision is adverse to the reclaimers. I know of a case where a consignment of scrap, or so-called scrap, to Rotterdam has led to the detention of the ship at a British port other than that she sailed from, and at the time of writing the situation is somewhat acute.

It does not seem to be generally known that there are several and by no means unimportant rubber factories in the Scandinavian countries, and there is nothing necessarily suspicious, therefore, about shipment of raw rubber and reclaimed to, say, Christiania, not many miles from which capital are situated the Norske Galoge Fabrik of Mjöndalen, near Drammen. It might be thought that reclaimers could make up their export losses by increased home business owing to large government contracts being given out; but here they are hit again, and badly, because the government specifications all put an embargo upon the use of reclaimed rubber. These are the old established specifications, and it is officially announced that they must be strictly adhered to even in this time of rush and stress. Moreover, with the present price of raw rubber there is little inducement for manufacturers to turn to reclaims of the higher sort, if they were disposed to take the risk of disregarding the regulations; and common qualities would almost certainly be detected. Other business where reclaimed rubber is often largely used is very quiet, both because of the loss of export trade and also on account of the depressed state of the cotton industry. The fact that recent specifications for insulated wire in Germany forbid the use of reclaimed rubber has also been announced.

SOME RECENT PATENTS.

In the October issue of THE INDIA RUBBER WORLD an interesting detailed notice is given of French patent No. 460,273 for reclaiming fabric impregnated with rubber. The subject is one which has received a good deal of attention in the past in England at the hands both of scrap dealers and reclaimers, more particularly with regard to waterproof fabric cuttings. No business success, however, can be recorded, and the destruction of the fabric is the universal procedure of reclaimers. One of the difficulties has been the labor involved in sorting the woolen from the cotton fabrics, as in the case of scrap the recovered cotton is valueless while wool scrap can always find a sale in the district of Yorkshire associated with the "shoddy" industry. The dealers, however, stipulate that the recovered fabric must be absolutely free from rubber, and though this appears to have been successfully achieved, the difficulty of obtaining sorted woolen scrap at a reasonable price led to the abandonment of the proposed enterprise. I notice that the French patent has special reference to the reclaiming of fabric such as vulcanizing cloths which contain but very little rubber. The rationale of the process is to soften and loosen the rubber by immersing the fabric for two or three days in xylol. With regard to the use of this solvent, the article mentioned above states that its price is over a dollar a gallon and that it is now unobtainable. This, however, is not the case in England, where tar distillation is carried on on such a large scale. Leaving pure xylol out of account, it may be said that for any rubber solvent purposes or-

dinary solvent naphtha—which consists mainly of xylol—will answer the purpose. The price of this varies from, say, 10*d.* (20.27 cents) to 1*s.* 4*d.* (32.43 cents) per gallon, its increased use for motor cars instead of petrol being offset by a large production from recovery coke-ovens.

NOTES AND MEMORANDA.

Now that the fortnightly rubber auctions in London have ceased, manufacturers are buying by private treaty from the rubber brokers. This system is preferred by the plantation interests in the Far East as they are freed from the necessity of arranging freight to England, this being seen to by the brokers who buy outright in the East. As to whether the new procedure will become permanent or exist for the period of hostilities only is a matter on which divergence of opinion is expressed.

GOVERNMENT PROOFING ORDERS.

The Manchester district—which may be called the headquarters of the trade—is busily employed, and some difficulty is being found in obtaining sufficient hands. Surprise has been expressed at some large orders—one worth £40,000—going past Manchester to Scotland, and it is evidence that the Scotch firms have made close bids for the business, one especially successful firm being that of Campbell Achnach & Co., of Glasgow.

TO WHAT BASE USES.

A detachment of Royal Engineers has been busily engaged at the Handforth works—which should have been turning out Pavea rubber by the ton at this date. A rumor gained currency that the stoppage of the works was due to inability to obtain certain chemicals from Germany. However that may be, 5,000 or more German prisoners of war are shortly due there, and the erstwhile neglected buildings have thus come into prominence and print for the second time this fateful year.

CHANGE OF NAME.

Changes of Teutonic to British names have been numerous since the war began, though there have not been many instances in the rubber trade. One such which may be mentioned is that of the managing director of the Premier Waterproof and Rubber Co., Limited, of Manchester (no connection with the Premier Reforming Co., of melancholy memory), Mr. Hugo William Hassberger being now known as Mr. Hugo William Hatton, which name should always be used in correspondence.

ANOTHER GIFT OF RUBBER FLOORING.

On October 16 the rubber flooring presented by the Rubber Growers' Association to the Children's Hospital, Great Ormond street, London, was "opened" or inaugurated by Lady Jellicoe on behalf of the association whose president, Mr. John McEwan, made an interesting speech. The flooring which is of pleasing design was the work of the India Rubber, Gutta Percha & Telegraph Works Co., of Silvertown, London, and was made, it need hardly be said, of plantation rubber.

THE LATE JOSEPH FRASER.

The late Joseph Fraser's death in Scotland recalled the fact that he was one of the leading Ceylon planters, being regarded as one of the most practical authorities on tropical products. He was frequently consulted by plantation companies.

Mr. Fraser was one of the most scientific of planters, having worked his way to the top without the influence of friends, the feeling being that no one had better deserved his success. He was a director of the Grand Central Estates and other Ceylon companies.

Death has been busy among the Ceylon planters in 1914. Besides Mr. Fraser, the obituary roll includes Melville White and John Rettie.

ADDRESS TO SIR HENRY BLAKE.

An address has been presented to Sir Henry Blake by the Rubber Growers' Association, recalling his services as president of the London International Rubber Exhibitions of 1908, 1911 and 1914, as well as in the capacity of president of the London Committee of the New York Rubber Exhibition of 1912. His endeavors to make known the details of tropical agriculture are likewise referred to with appreciation, while his services thus indicated are mentioned as the continuation of his work as governor in five great colonies.

EXPORTS OF RUBBER MANUFACTURES FROM MANCHESTER TO THE UNITED STATES.

A report from the American Consulate at Manchester, England, contains a table showing the exports from that district to the United States, including the Philippines, during the months of October, 1913 and 1914. From this table the following figures relating to rubber are obtained:

	1913.	1914.
Balata and other belting.....	$796.53	$28.30
Elastic web, cord, etc.....	382.31	50.22
India rubber sheets, pouches, etc.	1,219.50	3,298.69
Waterproof garments and cloth.	5,793.28	5,810.71

RUBBER COURSES AT THE MANCHESTER SCHOOL OF TECHNOLOGY.

Under the auspices of the Manchester education committee two laboratories were installed some years ago at the Manchester School of Technology, one for analytical work and the other for experiments in rubber manufacturing and for industrial investigations. The equipment includes a mixing mill and three-roll calender, a jacketed vulcanizing pan and a double platen, steam-heated vulcanizing press.

A course of 20 lectures on the production of rubber and the manufacture of rubber goods is scheduled for this season's course, which opened September 22.

RUBBER INSTRUCTION IN LONDON COLLEGES.

Two important rubber courses are in progress in London this fall and winter. One is a series of 12 lectures at the City of London College by Mr. Fred. Kaye on a group of subjects connected with rubber, including its commercial classification, plantation rubber, vulcanization, waterproofing and the manufacture of soft and hard rubber goods.

Last session of the rubber course at the Northern Polytechnic Institute, Holloway N., was attended by 38 students who competed for the prizes given, aggregating £15. For the coming session prizes amounting to £25 have been donated by Mr. Noel Trotter and Mr. Arthur Lampard.

GOLD MEDAL FROM THE RUBBER GROWERS' ASSOCIATION.

Mr. H. N. Ridley, C. M. G., late Director of Gardens and Forests, Straits Settlements, has received an honorary gold medal from the Rubber Growers' Association, London.

DEATH OF A PROMINENT RUBBER DIRECTOR.

After three months' illness Mr. Keith Fraser Arbuthnot died recently at Billinghurst, Sussex, England. He was one of the most prominent figures in the rubber share world. He was born in 1864. After being educated at Rugby he became a Mincing Lane tea broker, and was later on largely interested in rubber plantation companies, of many of which he became a director. In 1910 the Rubber Share Trust & Finance Co. then organized with a capital of £350,000, took over a number of his holdings. He was recently chairman of the Anglo-French Mercantile & Finance Corporation and of the United Sumatra Rubber Estates, Limited.

Trans-Atlantic Notes.

[Situation in Plantation Rubber; the War's Rubber Requirements; Views on Overproduction.]

SINCE the war broke out the London rubber market has, if anything, undergone a change for the better, so far as the plantation article is concerned. At the end of July smoked sheet was quoted at 2*s.* 2½*d.* [53.7 cents] per pound; at the time of writing it stands at 2*s.* 5½*d.* [59.8 cents]. On the other hand, fine hard Pará has fallen from 2*s.* 10¾*d.* [70.4 cents] to 2*s.* 6½*d.* [61.8 cents]. Latterly a fairly substantial rise has taken place in the price of plantation rubber, due mainly to the sinking of the steamer "Troilus," with some 1,200 tons of rubber aboard, by the German cruiser "Emden," since destroyed.

As regards the actual consumption of rubber, at the present time one can only point to the firmness of prices and infer that the demand is keeping fully abreast of the supply. This is the more remarkable because, for the time being, the Continental demand is almost a dead letter. The Antwerp market was, of course, suspended long since and the business transferred to London. Importers have thus to depend almost entirely upon the British and American demand, and so far, this has been sufficient to preserve the balance. Many English manufacturers are now busy with Government contracts of a size hitherto unheard of, and it is expected that this activity will be maintained as long as the war lasts. Much trade also is being secured that would, in the ordinary course of events, have gone to Germany and Austro-Hungary; and there seems no reason to doubt that this trade will be retained here after the war. All this notwithstanding, it is an open question whether the special requirements of the armies in the field will counterbalance the falling off in other directions. So far, market evidence gives answer in the affirmative.

POSSIBILITY OF SURPLUS.

The question of providing against a surplus of plantation rubber has been revived and the proposal is made that producers should set aside a percentage of their crops to subsidise rubber roadways and the development of new uses for the product in general. The fear is certainly entertained in some quarters that unless some such scheme be adopted a big surplus of rubber may accumulate within the ensuing twelve months.

The general situation in rubber was ably reviewed the other day by Mr. A. A. Baumann in the course of a speech at the annual meeting of the Rubber Share Trust & Finance Co., of which he is chairman. He spoke in part as follows:

"With regard to the prospects of the rubber industry on which our revenue depends, we may consider it from two points of view. There is first of all the ultimate prospects of prosperity and there is the present, or immediate future, of the industry to be considered. Of the ultimate prospects of solid success for the rubber industry I think no reasonable man can entertain a doubt. What are the two essential factors of a commercial success? They are the production of a basic commodity, and at such a cost as will leave a substantial profit. Both these essential factors are present in the rubber industry. Rubber, if not a basic commodity in the sense that sugar and wheat are, is, at all events, as necessary to modern civilization as copper, and I think that if you cannot call it a basic commodity today it certainly will become one in the immediate future.

"With regard to cost of production there can be no doubt that the good rubber companies—those which are not over-capitalized and which are well administered—will, when they are in full bearing, reduce their all-in-costs to something like 9*d.* per pound at least. It would, therefore, seem a mere arithmetical sum to infer that when our total area is in bearing our all-in-costs will be reduced to something like 9*d.* per pound, and with that cost I have no hesitation in saying that there is a very substantial margin of profit for the shareholders and for the owners of shares in rubber companies.

"With regard to the immediate future of the industry, I am bound to say that the adverse factors seem to predominate for the moment over the favorable ones, but I see no reason why we should be unduly pessimistic. The adverse factors are, of course, found in the increase of production accompanied by a diminution in certain quarters of consumption owing to the war. The estimated output from the plantations for the current year is 65,000 tons of rubber. Although I do not think that estimate will be realized, the probability is the amount will not be very far short of that figure. The estimated output of the plantations for the year 1915 is 85,000 tons, which I do not believe for a moment will be realized—for various reasons. But if you put the output of the plantations for 1915 at 85,000 tons it means an increase on the present production of 20,000 tons.

GERMAN REQUIREMENTS.

"Now, Germany is in the habit, or has been for the last two years, of consuming some 20,000 tons of rubber, of which about 10,000 tons have come from the plantations in the East. Well, I need hardly point out to you that you cannot increase your output by 20,000 tons and decrease your demand by 10,000 tons without having an adverse effect upon the market for the commodity. Against this may be set off one factor, and that is the increased consumption for war purposes by the Allies. There is no doubt that this war is very largely a motor war, and we can confidently anticipate a largely increased demand for rubber by Great Britain, France, Russia and the United States. But despite the difficulties of trading with Russia, there is already noticeable an increased demand by that country for rubber, which is not surprising, because the Russian soldiers are equipped with rubber boots, as ours ought to be, and there is, of course, very great wear and tear on tires. I am told that our manufacturers are working double shifts in making rubber sheets for our soldiers. So much for the increased consumption for war purposes.

"Secondly, we may look for diminished supplies of rubber, particularly from Brazil. Now, I have got some figures on that point which are really rather remarkable as showing the decrease of imports into this county during the nine months ended September 30. I find that to September 30 there were imported into Great Britain from all countries 49,442 tons of rubber as compared with 52,268 tons of rubber in the same period in 1913. The re-exports on the other hand from this country were larger in 1914 than they were in 1913. The re-exports from this country during the first nine months of the current year were 37,308 tons, as compared with 32,942 tons in 1913; leaving—and this is the important point—a net quantity for home use of 12,134 tons, as compared with 19,326 tons in the previous year, 1913—which, I think, is a very remarkable figure. Another consoling fact is that our re-exports to France and the United States for the current year are in excess of those which we sent them in the year 1913. In 1914 we re-exported to France 4,388 tons, as against 3,541 tons in the previous year, and to the United States of America we re-exported 17,257 tons as compared with 12,797 tons in the year 1913; so that we have to set off against what I call the unfavorable factors, the war and so on, the undoubtedly favorable fact that supplies from Brazil and from Africa are diminishing and that our re-exports to the United States, to France, and to Russia are increasing. But still I think you will find in the steady prices in the market that that fact is reflected"

FINANCIAL OUTLOOK.

With the London Stock Exchange closed, no official dealing in shares has been possible since the end of July. A cash trade of moderate proportions has, however, been going on. The problems to be dealt with before reopening can be considered include loans from the banks and the possibility of their being called in; ability of the enemy to raise money here by the realization of stock, and the payment of differences on speculative accounts. It is believed that a satisfactory scheme has at lnegth been devised which will enable reopening at an early date; but it is obvious that the scheme must provide for the deferred payment of differences, which could not possibly be met at the present time.

So far as rubber shares are concerned, values have tended to improve upon the level to which they fell on the declaration of war. In general, stock appears to be firmly held and bargain hunters have met with very little success. So long as the price of the commodity is maintained investors have nothing to fear, for it is contended that producing costs are likely to be still further reduced as a result of the necessities of the times.

AUCTION SALES SUSPENDED.

Since war broke out one attempt has been made to resume the customary auction sales of plantation rubber, but as the result was something of a fiasco this method of sale has been indefinitely shelved. Day to day selling on a more or less cash basis has, however, gone on without interruption and appears to have fully satisfied the requirements of buyers and sellers alike. As a result, it is thought that this method of sale may to a great extent supersede the auctioning of the commodity—a system which has long been viewed with hostility in some quarters. It is contended that the auction system lends itself to virtual control by a small ring of buyers and that as no cohesion or common understanding exists among sellers the latter are compelled to show their hands, to their own undoing. Be this as it may, the fact is worth noting that since the auctions were dropped prices have kept remarkably firm. This may or may not be due to the change of method, but advocates of private selling looks upon it as a vindication of their claims.

RIGHT TO SEARCH AMERICAN SHIPS.

Great satisfaction is felt here at the recent action of the United States Government in conceding to Great Britain the right to search all American vessels at sea. Since the embargo was put upon the shipment of rubber from this country to the greater part of the Continent of Europe it was recognized that Germany's main hope of securing fresh supplies of rubber must lie with the United States and that attempts would be made to fulfil the requirements through that channel. Now that all possibility of friction between the two countries in respect of searching vessels at sea has been removed, the re-export of rubber from the United States to Europe will amount to a very small item.

American manufacturers will doubtless be interested in the subject, now under consideration by the war office, of the supply of rubber boots for the army during the coming winter. In many cases the troops have been obliged to stand in wet trenches for long periods at a time and it is rightly urged that the use of rubbers would obviate much sickness and discomfort. No decision has yet been arrived at. The interest of rubber producers naturally ends with the adoption of the idea by the Government, it being immaterial to them where the rubbers are made so long as extra consumption of the raw material is assured. There are makers of these goods in England, but there is no doubt that manufacturers in the United States might secure big contracts in the event of a favorable decision by the war office.

RUBBER LAND IN MALAYA.

In the "Agricultural Bulletin of the Federated Malay States," the official organ of the Department of Agriculture, Mr. M. Barrowcliff, who has visited every district in British Malaya, has some interesting things to say about the suitability of the soil for rubber cultivation. He points out that the land has no previous cultivation history and has for the most part been claimed from the original jungle within the last few years. The selections made during the rubber boom, he remarks, may be likened to a lottery which is now only beginning to reveal its prizes—and its blanks—for in many instances it is apparent that the yields likely to be obtained will fall far short of anticipations. According to this authority, the difference between the best rubber land and the average, indifferent land may be put as at least 100 per cent., and, in the case of cocoanuts, at 300 per cent. or more. From these figures some idea may be gathered of what significance to the investor the choice of land is. There is, however, no doubt that many of the less suitable soils are open to vast improvement under proper treatment, but it is essential that this should be started while the plantation is young.

TRADE OF THE ALLIANCE NOW OPEN TO OTHERS.

The British Board of Trade bulletins issued since the outbreak of war show the amount of export trade formerly done by Germany and Austria and now open to manufacturers of other nations to be something over $17,500,000 in rubber goods exclusive of tires, toys and belting. This represents about $4,000,000 of trade in the United Kingdom, the balance in Colonial and neutral markets. Germany has not been in the past an important market for British rubber manufacturers, the value of the annual exports from the United Kingdom to Germany having been only about $1,000,000.

JANSSEN & HYMANS.

A new firm of rubber brokers—Janssen & Hymans—has been established in London, at 29, Mincing Lane, E. C. The firm is composed of Ernest Janssen and Nico A. C. Hymans, the former a member of the firm of Joosten & Janssen, and the latter of the firm of Wynand & Keppler—both of Amsterdam.

TRADE RESTRICTIONS AND CONTRABAND.

The Russian Government has prohibited the export from that country of rubber tires and rubber.

Switzerland prohibits until further notice the export of india rubber for insulating purposes.

A list of articles which are regarded as contraband of war during the present war between Japan and Germany was issued by the Japanese Navy Department on August 23. This list is practically the same as the one previously issued by the British Government.

The Government of Newfoundland, as an emergency measure, has increased the rates on a number of articles entering that colony. The duty now levied on tires is 45 per cent. The old rate was 40 per cent.

A Presidential decree forbids the export or re-export from France of rubber, balata and gutta percha, crude or reclaimed. The decree provides, however, for exemptions under conditions to be determined by the Ministers of War and Finance.

The British list of articles prohibited export to all destinations includes acetone and sulphate of zinc. The list prohibited export to foreign ports in Europe and on the Mediterranean and Black Seas, with the exception of those of France, Belgium, Russia, Spain and Portugal, includes asbestos, cables, glycerine, sulphur and vanadium—in addition, of course, to rubber.

John Victor Alden, son of Adelbert H. Alden and formerly president of the Seamless Rubber Co., was in Europe at the outbreak of the present war. He has joined the staff of the American Hospital at Neuilly, near Paris, where he is assisting in caring for wounded French and British soldiers.

SOME RUBBER INTERESTS IN EUROPE.

RUBBER IMPORTS AT BORDEAUX.

IMPORTS of rubber at Bordeaux for 1913 represented 2,543 tons against 3,484 tons in 1912.

The reduction in quantity was due to the fall in prices, which dropped during the period from March to September, many importers ceasing their operations at sources of supply. Business in Guinea and Ivory Coast rubber only recommenced towards the close of the year, when the natives were willing to sell in small lots. Imports of balata in 1913 showed a marked increase over the quantities of 1912, but prices were unsatisfactory owing to the irregularity of quality.

THE B. F. GOODRICH CO. IN FRANCE.

The French factory of The B. F. Goodrich Co., at Colombes, is now being operated under the direction of the Government of France, and its entire output of tires is being used on Government automobiles.

A GERMAN RUBBER FACTORY IN FRANCE CLOSED.

The plant of the Continental Société Anonyme, at 146 Avenue Malakoff, Paris, has been closed by order of the French Government. This company is a branch of the Continental Caoutchouc & Gutta Percha Compagnie, with headquarters in Hanover, Germany, and its factory has been looked upon with suspicion for the past two years by some of the leading French concerns, who claimed that it was being used as a base of operation for an extensive spy system particularly interested in military and aeronautic operations. On the outbreak of the war all the German members of the firm went back home, the only French member, Maurice Echalié, being left to conduct the operation of the plant. Its entire output and stock have been requisitioned by the government.

RUSSIAN GOVERNMENT IN THE MARKET FOR AEROPLANES.

Robert Pluym, who visited New York early in November, registering from Petrograd, is said to have announced his purpose in visiting this country to be the purchase of automobiles and aeroplanes for the Russian Government.

AMSTERDAM RUBBER IMPORTS.

While in 1907 the receipts of plantation rubber at Amsterdam only amounted to a nominal quantity, the total for 1913 rose to 1,039 tons, composed of the following sorts: *Hevea*, 839 tons; *Ficus*, 151 tons; miscellaneous varieties, 49 tons. This result is attributed by the British Consul to the increasing production of Dutch Indian estates, as well as to the favorable prices realized under the system of inscription sales at Amsterdam.

DENMARK'S RUBBER AND CABLE INDUSTRIES IN WAR TIMES.

In reply to a circular inquiry from the Danish Industrial Council, the Scandinavian Rubber Co. of Odense reported in September that rubber had been ordered from England and it was hoped to get it through by one of the Danish steam lines. Other raw materials were in stock to the extent of six months' requirements. Sales of rubber manufactures were difficult and large orders were not looked for.

The Northern Cable & Wire Works, of Copenhagen, stated that it was at present well provided with work. At the outbreak of the war it had large cable orders on hand, which were increased by the further contracts taken in consequence of the military preparations and the lack of communication with foreign sources of supply.

ITALY'S RUBBER IMPORTS.

According to a consular return Italian imports of crude rubber and gutta percha represented $9,002,240 in 1912 and $6,038,448 in 1913. The proportion from the United States equaled: 1912, $228,126; 1913, $172,349. The volume imported for five months ending May was as follows: 1912, 1,943 tons; 1913, 1,365 tons; 1914, 2,276 tons.

THE GENERAL SITUATION IN GERMANY.

LETTERS received in this country from Germany show that the German rubber industry has stood the shock of war fairly well, but is far from good except in certain lines. The great demand for tires has favorably affected the turnover of tire works, and many of them have actually now more work on hand than would be the case under normal conditions. The German war office, when war seemed inevitable, made arrangements with some of the leading firms to supply all tires in stock and gave in addition large orders for immediate delivery. The foreign firms having stocks of tires in Germany have been compelled to hand these over to the government.

The fertile mind of the German rubber manufacturer apparently has accommodated itself quickly, with that adaptation which is one of the main reasons for the enormous development of German exports during the last years, to the conditions created by the war and soon the trade press began to carry advertisements of supplies of war material. A great demand for surgical instruments and rubber sheets has arisen, and will most likely continue until cessation of hostilities. Germany has been in the habit of buying large quantities of surgical instruments from England, and even American houses have been able to send such goods to Germany. The large demand which has sprung up during the last months must now be covered by home production entirely, which puts considerable pressure on the rubber manufacturers, especially as they have to solve the problem of larger production with a reduced number of workmen.

Germany has bought large quantities of rubber goods every year from England, the United States, Belgium, France and Italy. Even taken in consideration that the demand which has increased in some departments has fallen off in others, it is clear that a large part of those goods which came formerly from the countries now at war with Germany will either have to be supplied by friendly countries or must be manufactured in Germany. The last eventuality alone seems to have been sufficient to balance the loss in the home trade.

Nevertheless, there has been an enormous falling off in manufacturing activity, as practically the whole of the export trade has come to a standstill. The inability of Germany to hold the sea has made it impossible or at least difficult to carry on direct trade with neutral countries. In addition to that Germany misses the support of the London market in the business which formerly has been arranged by London merchants for German account or has been supplied by Germany filling orders for London shippers. German manufacturers are of the opinion that most of this trade will come back after the war, as it will be difficult for other countries, with the exception possibly of the United States, to replace those goods.

Nearly all the leading firms are keeping their works going, but in a few cases it has been necessary to shut down some of the departments.

A NEW GERMAN SEAMLESS DRESS SHIELD.

A sample has been registered by Ferdinand Henke, of Hanover, of a system for making seamless dress shields by means of a flat dipper made of wood or glass, provided with a handle, the head of which is rounded off and the lower edge cut out. Any desired number of dippers can be fastened on a shaft and dipped in a Pará gum solution. The solution adheres to the dipper when removed, being dried and subsequently vulcanized. The fine layer of rubber formed on the dipper is removed by means of a roller. In this way it is claimed that a seamless dress shield in one piece is produced.

SAVING IN WEAR OF RUBBER HEELS.

A rubber heel of which sample has been registered by Alois Bach, of Dortmund, has holes at the points most exposed to wear. In these holes small pieces of metal are introduced with countersunk heads to prevent them falling out.

RUBBER SOLVENTS IN GERMANY DURING THE WAR.

IN addition to a shortage of rubber in Germany it appears that the question of solvents is also pressing. With characteristic thoroughness the German scientists are studying this lesser phase of the rubber problem and trying to find a solution.

One might think that with the import of crude rubber absolutely shut off this all important question would entirely occupy the German mind, but not so. The smallest detail is carefully worked out by the scientist in co-operation with the government or with the large firms.

It must be remembered that Germany produces practically no petroleum within her borders, that Austria-Hungary in the province of Galicia is a large producer, but that this province was overrun by the Russians, who have seemingly retreated from some parts; but it is safe to say that what they left was not of much value, and production will be crippled there for a long time. Rumania seems to be becoming also more unfriendly since the death of the ruler, so that the gasoline problem is increasingly more serious. This war is fought on gasoline as the motive power to a large extent.

Germany has an immense coal tar industry, but this consists in manufacturing the crude materials into high-priced articles like dyes and medicines. Germany has for years imported from England a large amount of crude coal tar products. Therefore the coal tar products will be substituted for gasoline for motors; but this is only a drop in the bucket compared with the gasoline requirements. As showing the recognition of this condition and the preparation for it it is said that the Committee on Provision of War Necessites whch was appointed by the German Government to look out for the future needs started up the Belgian coke ovens at Liege within two days after the Germans took the town. This will furnish coal tar as a by-product, which will in turn furnish the benzol and motor spirit.

Dr. Fr. Frank and Dr. E. Marckwald, of Berlin, have discussed this problem in the columns of "Gummi Zeitung" of recent date. Some of their remarks will be abstracted here, as they may supply useful hints for the American trade and will at least inform us of what is being done abroad.

Coal tar benzol mixed with gasoline has been extensively used in motors in France and Germany, as have also alcohol and benzol mixed and separate; but alcohol only furnishes about six-tenths the power per gallon that gasoline does. The German Government took possession of all stocks of benzol and gasoline on the outbreak of the war, so that all manufacturing of rubber articles requiring solution stopped. Plants with government contracts were allowed to use some solvents when necessary, but were obliged to exercise caution and not waste anything.

It is now thought that Germany and Austria may be able to supply some substitute products. With this in view an effort will be made to use those less volatile. It is believed that the Xylenes, which boil at about 140 deg. C., would be suitable solvents and might be supplied at a reasonable price. It is said that there is no hope of the rubber manufacturers getting any benzine, or what we call naphtha, except what is allowed to those who are working on government contracts.

Carbon tetra-chloride is discussed, but as it is remarkably heavy and the fumes and vapors are disagreeable, it is thus objectionable, and while it dissolves crude rubber satisfactorily yet in cold vulcanization it penetrates deeply and the product is usually too hard. Fusel oil is also thought of, but its supply is too limited. The terpines are also mentioned with the statement that their boiling point is too high.

Carbon bi-sulphide is also recommended in spite of its odor and poisonous character, and the danger of fire. It is said that industrial hygiene has progressed in Germany to such a point that this can now be used with safety. Mixing with carbon tetra-chloride is recommended so as to reduce danger of fire.

In a later article these same authors state that as the supply of benzine (or gasoline) has been found to be sufficient for use in the army, some benzol may be supplied to the rubber manufacturers, who will thus be enabled to continue operations. The objections to benzol and xylol have been overcome to a great extent by the rubber manufacturers though these are found to retain water much more than the naphthas.

A mixture of equal parts of carbon bi-sulphide and carbon tetra-chloride having a specific gravity of 1.4123 has been found to be the most suitable mixture of these two solvents, but fire risks are not entirely eliminated and the odors are quite disagreeable. Five per cent. alcohol added to this mixture is said to have remarkable influence on the solvent properties and the viscosity. Considerable quantities of rubber are said to dissolve in this mixed solvent in a few minutes, forming a clear and thin solution. Fear is expressed that the alcohol mixture may cause some trouble on account of the residue of water thus introduced into the rubber. The experiments were made with absolute alcohol. The latest information is that heavy benzine will be allowed to be used in technical work.

GROWTH OF GERMAN RUBBER IMPORTS.

Recent figures of the German Statistical Office show that the national population has grown from 62,900,000 in the middle of 1908, to 67,800,000 at the same period of 1914, being an increase of 4,900,000, or more than 7 per cent. This increase of population has been accompanied by a growth in the imports of raw materials, particularly rubber.

German rubber imports for the last 5 years were:

		Quantity	Value
1909	*tons*	15,500	$33,700,000
1910		18,700	55,500,000
1911		20,000	42,387,500
1912		20,600	40,675,000
1913		20,500	24,800,000

Within the last 5 years the German imports of rubber have thus increased in quantity, while they show a falling off in value.

Exports from German East Africa, Camerun and Togo represented: 1909, 2,138.7 tons; 1910, 2,840.4 tons; 1911, 3,709.5 tons; 1912, 4,180.2 tons.

GERMANY'S CABLE EXPORTS.

According to English statistics, the total German exports of electrical machinery and apparatus for 1913 represented a weight of 133,855 tons and a value of $69,000,000; of which land cables weighed 47,571 tons and had a value of $9,550,000. The chief countries to which this quantity was exported were: Holland, 6,955 tons; Argentina, 6,835; Norway, 3,655; Japan, 3,724; Dutch Indies, 3,616; Sweden, 2,281, and British South Africa, 1,195—the exports to these countries representing about 70 per cent. of the total weight. In addition, there were 4,739 tons of submarine cable exported. German electrical exports had increased in 1913 about 50 per cent. since 1910.

SHOW CASE FOR RUBBER HEELS AND TIPS.

A German has recently taken out a patent in his country for a show case constructed to hold all the different sizes of rubber heels and tips made for the German trade. The purpose of the case is to make it possible for the salesman to find in a moment the exact size of heel or tip required.

THE RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

A STATISTICAL return lately issued by the Japanese government showed an increase both in quality and value of rubber imports for 1913 as compared with 1912. The following are the details with sources:

COMPARATIVE JAPANESE RUBBER IMPORTS OF 1912 AND 1913.

	1912		1913	
From—	Pounds.	Value.	Pounds.	Value.
British India	167,063	$140,781	340,343	$239,281
British Straits Settlements	1,214,485	820,891	1,657,265	885,602
Dutch Indies	124,904	73,171	13,928	8,908
Great Britain	242,620	230,663	440,802	408,865
Germany	25,600	19,307	15,425	10,425
United States	158,176	160,556	139,624	100,112
French India	3,805	3,874	4,464	3,032
Other countries	67,377	65,314	70,092	69,697
Total	2,004,030	$1,514,557	2,681,943	$1,725,922

Increase in 1913 about 33 per cent. in quantity, 14 per cent. in value.

The progress made by the Japanese rubber industry has been largely due to the manufacture of jinrikisha and bicycle tires, which had hitherto been generally imported. Among the companies which have gone ahead in this line are: the Kakuichi Rubber Co., of Osaka; the Yokohama Electric Wire Works, of Yokohama and Osaka; the Nipon Electric Wire & Cable Co., of Tokyo; the Sumitomo Electric Wire Works, of Osaka, and the Settsu Rubber Co., of Hyogo. The recently established companies include the Taisho Rubber Manufacturing Co. and the Naigai Rubber Co., both of Kobe.

Owing to the development of the industry at Kobe and Osaka the total imports of crude rubber at these points now surpass those of Yokohama, as shown by the following table:

APPROXIMATE RECEIPTS OF RUBBER AT PRINCIPAL JAPANESE PORTS.

	1912		1913	
	Pounds.	Value.	Pounds.	Value.
Yokohama	1,023,052	$826,580	1,228,710	$851,814
Kobe	970,897	676,850	1,438,893	862,483
Osaka	10,081	11,127	14,037	11,319
Nagasaki			303	306
Total	2,004,030	$1,514,557	2,681,943	$1,725,922

Eighty per cent. of the 1913 crude rubber imports from Singapore consisted of plantation. While the fall in prices caused an augmented import in 1913, many crude rubber importers are said to have lost heavily. The imports of hard fine Para were reduced owing to competition of plantation rubber. In consequence the receipts from the United States declined. Imports of African rubber fell off in 1912 and were altogether lacking in 1913, on account of the fall in plantation prices. Generally speaking the imports of crude rubber were in 1913 well taken up by consumers at the following prices:

FLUCTUATIONS OF RUBBER IN JAPAN, 1913.

Variety—	Jan.-Feb.	Sept.	Oct.-Nov.
Borneo	yen 1.60 (80c.)	yen 1.25 (63c.)	yen 1.35 (68c.)
Indian	yen 1.60 (80c.)	yen 1.20 (60c.)	yen 1.00 (50c.)
Plantation sheet	yen 2.25 ($1.13)	yen 95 (48c.)	yen 1.20 (60c.)
Pará	yen 2.50 ($1.25)	yen 1.80 (90c.)	yen 1.70 (85c.)

BICYCLE IMPORTS, 1913.

Japanese imports of bicycles and parts in 1913 amounted to $1,586,492, as compared with $1,558,118 in 1912, the net increase being $28,374.

Japanese exports during 1913 included insulated electric wire $47,060 (principally for China) and jinrikishas and parts $358,141. The largest exports of the latter were to the British Straits Settlements. Exports of complete carriages fell off in consequence of business depression in Singapore and British India, while in Hong Kong and Annam many manufacturers are constructing jinrikishas from imported parts.

DISSOLUTION OF TOHAN RUBBER CO.

Having accomplished its purpose, the Tohan Rubber Co., formed in February, 1914, was dissolved on August 31. It was composed of five medical rubber tubing manufacturers and nineteen dealers, with the object of bringing up the prices of the article by clearing off the makers' stocks.

JAPANESE RUBBER IMPORTS AND EXPORTS.

THE report of United States Deputy Consul General J. W. Ballantine, of Yokohama, on Japanese foreign trade gives the total Japanese imports for 1912 and 1913 as $308,258,154 and $363,256,960, and the total Japanese exports for these two years $262,436,957 and $314,965,186. The Japanese imports for the two years from the United States amounted to $63,253,847 and $60,959,364, and the exports to the United States to $84,017,030 and $91,868,612.

The part of the report devoted to Japanese rubber imports and exports is particularly interesting. The chief imports of rubber manufactured goods into that country for 1912 and 1913 are shown in the table below:

CHIEF RUBBER IMPORTS INTO JAPAN.

Insulated electric wire: From	1912.	1913.
United States	$129,912	$47,836
Germany	1,237,458	706,495
Great Britain	1,305,778	244,638
Other countries	10,265	2,567
	$2,683,413	$1,001,536
Tires chiefly for bicycles: From		
United States	$22,609	$8,835
Great Britain	526,111	492,387
Germany	4,100	15,774
Other countries	1,630	277
	$554,450	$517,273

Imports from United States included:	1912.	1913.
Crude rubber and gutta percha	$159,914	$90,712
Rubber boots and shoes	41,285	41,845
Manufactures not otherwise specified	284,464	241,152

The aggregate Japanese imports of india rubber and gutta percha were: 1912, $1,508,502; 1913, $1,719,019. Of this total the United States furnished: 1912, $159,914; 1913, $90,712. Every year shows an increase in the Japanese imports of rubber, about one-half of which comes from the British Straits Settlements.

Among the exports sulphur amounted in 1912 to $869,147; in 1913 to $986,456. Of this aggregate the United States received: 1912, $443,603; 1913, $358,457.

Japanese imports and exports, it will be noticed, both showed for 1913 an increase of about 20 per cent. above 1912. Trade with the United States alone, on the other hand, displayed a reduction in imports of 5 per cent. and an advance in exports of 8 per cent.

YOKOHAMA RUBBER IMPORTS.

A consular report for the years 1912 and 1913 shows the following imports of rubber at Yokohama.

	Tons.	Value.
1912	532	$823,274
1913	614	848,407

It will interest American manufacturers to know that the Japanese government proposes to lay a cable between Nagasaki and Shanghai.

The permanent market committee of the Rubber Growers' Association has discontinued the recording of plantation rubber weights in hundredweights, quarters and pounds, having substituted pounds for the other denominations.

PLANTATION RUBBER INDUSTRY AND THE WAR.

ACCORDING to a communication from M. N. Le Coispellier to the "Annals of Indo-China Rubber Planters," the rubber trade, in common with business in general, was surprised at the sudden breaking out of the war in the closing days of July last, when sales ceased in the East. Penang and Singapore held their last auctions previous to the war on July 28. They showed a lack of activity under the influence of the European cables, which left but small hope of maintaining peace. Sales were resumed rather timidly on August 12. The last sale before the war was held at Ceylon on July 31, when the situation was such that the principal sellers withdrew their offerings, some private sales being afterwards made at prices equaling between 48 and 49 cents (American currency) per pound.

On the suspension of sales the planters of the Malay Peninsula lost no time in devising plans for meeting the situation. Messrs. Skinner and Macfadyen, former and present presidents of the Planters' Association of Malaya, went to Singapore to call the attention of the government to the prospective effect of the altered conditions on the plantation industry. A general meeting of the association was also held August 6, at Kuala Lumpur, to discuss the steps to be taken.

After an ineffectual attempt to obtain the co-operation of financial institutions, an arrangement was made by which both in the Federated Malay States and in the colony of the Straits Settlements the respective governments would make cash advances to the estate owners for the purpose of at least feeding the laborers, while official intervention would be used to persuade the latter that it was in their interest to remain on the plantations on the terms which would be offered them.

To cover these advances the government would receive consignments of first quality rubber, on which advances would be made at a rate equaling about 18 cents American currency per pound, or listed securities. In certain special cases loans would be made on personal guarantees. The requirements of the Federated Malay States for making these advances in money or rice were met by the help of the Straits Settlement colony, which took over shares from the Federated Malay States, which it would have been difficult to sell in present conditions, but which the colony was in a position to handle, having acquired a considerable stock of gold.

The principal anxiety of the planters was lest they would be unable to retain their coolies (estimated at 270,000), hence addresses were delivered in the various districts urging the laborers to accept the temporary conditions offered them for keeping the estates in good shape and doing a small amount of tapping.

According to M. Le Coispellier's statement, a large number of estates on the east of Sumatra belonging to English and German planters decided to cease operations, leaving to their own resources their 30,000 to 40,000 coolies, who were obliged to return to Java.

The efforts made on the Malay Peninsula to open up new outlets for rubber, in order to replace those closed in Europe, are spoken of as being all the more opportune, as there is a certain slackening of the English rubber industry and almost a total cessation in France, Belgium, Russia, Austria and Germany.

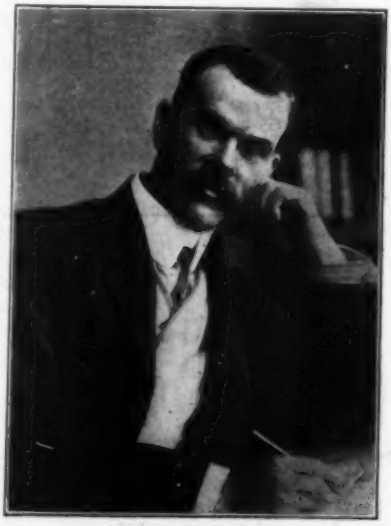
It is added that the horizon is becoming clearer for the rubber industry in general, and particularly for producers, the maritime commercial routes remaining free, which enables the raw material to be brought in security to the markets. The unprecedented consumption of rubber for the pneumatic tires of automobiles for military purposes will alone form an important outlet. This situation, the planters believe, cannot fail to react on the price of the raw material, all the more as, owing to the uncertainties of the opening of the campaign, a slackening of production took place which may lead to a scarcity of product. The hope is expressed that the reaction will not be sufficient to bring back low class wild rubbers to consumption. Had plantation rubber not continued to reach the markets, manufacturers would have tried to promote the cultivation of lower grades in Brazil.

Regarding the Indo-China plantations M. Le Coispellier remarks:

"The question of labor not having to be met at present, our policy should be to continue as we have begun, so as to be ready to benefit by the increase of price which will certainly take place in Europe after the war, when the rubber industry there will be revived—pacified for a long time to come.

H. F. MACMILLAN, F. L. S.

"THE most beautiful gardens in the world" is the way a great many tourists describe the Royal Botanic Gardens at Peradeniya, Ceylon. However that may be, these gardens are certainly, from the rubber standpoint, the most interesting and important anywhere in the tropics. They have achieved this distinction through the intelligent work of the long line of well trained and conscientious scientists who since the Gardens were first started, in 1821, have devoted their lives to the success of agriculture and horticulture in the British tropical colonies.



H. F. MACMILLAN.

On the retirement of Mr. J. C. Willis in December, 1911, H. F. Macmillan, F. L. S., was appointed superintendent of these Gardens. He received his early training at the Royal Botanic Gardens, Kew, London, and at the Royal College of Science, South Kensington, London. The Secretary of State for the Colonies made him Curator of the Royal Botanic Gardens at Peradeniya in 1895. He began at once to develop new features, transforming a portion of the grounds into an extensive floricultural section, now easily the most popular and attractive feature of the Gardens.

He is well known as the author of numerous pamphlets and bulletins on botanical, horticultural and agricultural subjects, including "Notes on Ceylon Botany," "Illustrated Guide to the Royal Botanic Gardens, Peradeniya" (an elaborate publication now in its second edition) and the familiar "Handbook of Tropical Gardening and Planting." The first edition of the latter, of which the Government of Ceylon purchased a large number of copies, was sold out within ten months of its publication. A second and much enlarged edition containing some 300 illustrations (mostly from photographs taken by the author) is now out of the press. Another work recently completed is an illustrated bulletin on "The Use of Explosives in Agriculture," while he has in hand the preparation of a "Classified Catalog of the Collection at the Royal Botanic Gardens, Peradeniya."

Mr. Macmillan was secretary of the All-Ceylon Exhibition of 1912, the largest exhibition ever held in Ceylon, and in recognition of his services in this capacity he was presented with a special gold medal. He was promoted to the office of Chief of

Division of Botanic Gardens in Ceylon on the resignation of Dr. Lock, under the new Department of Agriculture so ably presided over by Mr. Lyne.

With little time for hobbies, he has managed to specialize to some extent in photography, and possesses doubtless the largest collection of photographs of botanic and agri-horticultural subjects in Ceylon. He has won many medals, cups, etc., for photography at exhibitions, the latest being a first prize of £25 offered by the "India Rubber Journal" at the London Rubber Exhibition for a series of photographs showing the production of plantation rubber from seed to shipment.

He devised, in the early days of rubber planting, a method of transporting rubber plants and seeds over long journeys, for which a gold medal was awarded at the first rubber exhibition held in Ceylon, in 1906. As a result of this, rubber plants were successfully distributed from Ceylon to practically all parts of the tropical world, including even Brazil and other parts of tropical America. He was closely identified with the introduction of different kinds of rubber into Ceylon in the early days of rubber and with the spread of information regarding their cultivation and prospective merits.

While Mr. Macmillan has devoted himself to tropical botany for so many years, he still finds time for an occasional game of golf, and, as a matter of fact, he laid out, on a very rugged and apparently unpromising piece of land, the popular and picturesque links of the Kandy Golf Club, of which he has been made not only Honorary Ground Secretary, in recognition of his services, but an honorary life member.

Some Rubber Planting Notes.

CEYLON CHAMBER OF COMMERCE REPORT.

THE report of the Ceylon Chamber of Commerce for the half year ending June 30, 1914, showed the exports of rubber for the first six months of the last three years to have been as follows: 1912, 5,697,133 pounds; 1913, 10,498,434 pounds; 1914, 17,368,591 pounds.

Attention is called to the fact that Ceylon rubber exports continue practically to double each year.

Regarding distribution, it is remarked that the local Colombo market is capable of dealing with much larger supplies than have hitherto been available, enjoying, as it does, special facilities for direct shipment to all the principal rubber markets in the world. It is added that it is a matter of conjecture, whether rubber produced in other Eastern countries will be consigned to Colombo for sale, but it is considered that Ceylon grown rubber can undoubtedly be dealt with to advantage locally.

There is room for improvement in the matter of grading and packing, especially on the former point. Good parcels are frequently diminished in value by a small proportion of "rocky" pieces, a defect which might easily be overcome by additional factory supervision. The adoption is recommended of some generally accepted uniform method of sorting, thus arriving at standardization. In this way operations with the consuming markets would be facilitated; the reasonable requirements of manufacturers being met by eliminating a number of the sorts and varieties at present brought to market.

Mr. William Moir, the chairman, was re-elected for another year.

CEYLON RUBBER EXPORTS.

According to the report of the German Imperial Consulate at Colombo, the year 1913 was a critical period for the rubber industry of Ceylon. The price at the beginning of the year equaled $1.06 United States currency per pound, and fell in September to the equivalent of 48 cents per pound. The quantity exported in 1913—about 28 million pounds—was distributed as follows: To Great Britain, 15,238,000 pounds; United States, 6,572,000 pounds; Belgium, 4,124,000 pounds; Germany, 431,449 pounds; other countries (about) 1,634,551 pounds.

THE AGAR SMOKING APPARATUS.

C. Alma Baker, of Perak, one of the largest planters of the Federated Malay States, lately visited R. S. Agar's Ceylon estate to see the operation of the Agar smoking machine. Mr. Baker was of the opinion that the Agar machine, with slight alterations, would prove exceedingly valuable to the planting industry. Its absolute simplicity constitutes its chief merit. The rubber is coagulated in a receptacle, through which there passes a large cylinder which carries the smoke through the latex, the latter being either completely coagulated into lump or drawn off before complete coagulation, put into pans and made into the standard required for the market. The machine takes 125 gallons of latex at a charge, which requires from 20 to 30 minutes to coagulate, giving in a 10-hour day 3,000 pounds of dry rubber or 6,000 pounds with one smoking chamber for two machines.

The rubber produced by the Agar process is said to be very clear. No acetic acid is required, it being claimed that for this reason the rubber contains much more of the essential qualities than when obtained by the use of acid.

RUBBER CULTIVATION IN INDIA.

Rubber production in India is confined to Assam, Burma and the Madras Presidency. Statistics for the fiscal years ending March 31, 1913 and 1914, are as follows:

	1913.	1914.
Assam .....*tons*	52	24
Madras	444	798
Burma	235	341
Total	731	1,163

While Burma heads the list in acreage and number of trees planted, most of these trees, being less than six years old, are at present unproductive. Burma has 29,544 acres under rubber with 4,911,399 trees; while Madras has 12,022 acres, with 1,636,476 trees, and Assam, 4,681 acres, with 137,430 trees. The rubber production of Madras is thus at present more than double that of Burma.

JOHORE'S PROGRESS.

According to an official report on Johore for 1913, the revenue equaled in United States currency $2,451,991, with an expenditure equaling $2,435,239. The imports represented $5,240,525 and the exports $7,959,196.

The principal events which marked the progress of 1913 in Johore were the fall in rubber prices and the consequent readjustment of payment for labor. Owing to the former cause, the opening up of new lands for rubber cultivation by European companies nearly ceased, while the Japanese during the year added 11,000 acres to their existing cultivated areas. Many European estates were thus able to discharge a number of coolies, this large available supply of labor resulting in a reduction in the scale of wages

The export returns of other agricultural produce displayed no marked variation as compared with previous years, rubber forming a notable exception, the production having risen from 22,000 pikuls (2,933,333 pounds) in 1912 to 46,000 pikuls (6,133,333 pounds) in 1913, an advance of about 109 per cent. It is thought that this rate of increase may possibly be maintained during the next few years, as the large areas planted in 1911 and 1912 reach maturity, but with the spread of more rational ideas as to the conservation of bark a reduction in output would naturally result. Areca nut plantations have been in some instances cut down to make room for rubber.

HALF SALARIES TO EUROPEAN ESTATE MANAGERS.

At a recent meeting of the Planters' Association of Malaya, a proposal was made for reducing the salaries of European managers and assistants. It is reported that in some cases Europeans were placed on half salaries, but the hope has been expressed that when estates revert to full payment of coolies wages the remuneration of the officials will follow suit. The establishment of a system of retail cash trading was likewise advocated, as possibly leading to an appreciable reduction of living expenses. In fact, the continuance of the cash arrangements now in force is recommended, in place of the previous credit system.

GERMAN EAST AFRICAN PLANTATIONS.

During 1913 the rubber plantations of the Amani Biological Station were considerably developed. *Manihot* seeds were produced in greater quantity than was found needful, the demand having slackened. A great number of the older trees were broken by the wind. *Hevea* was well developed, seeds and plants being abundantly distributed. A certain number of old trees was lost through the ravages of parasites on their roots. *Ficus elastica* prospered, particularly the Sumatra variety with small leaves. The older plantings of *Castilloa* have been given up, as they were found to produce an inferior latex, but the seeds imported from Saigon and Costa Rica have produced other trees which can soon be tapped. A large number of vines has been planted in the gardens of the Amani institute. Cultivated gutta percha has yielded relatively good results, but the flowering has in some cases been slow.

DUTCH INDIAN RUBBER PRODUCTION.

A British consular report gives the following details of the exports of the different varieties of rubber from Java within the last two years:

	1912.	1913
Hevea Brasiliensis .....*tons*	485	2,339
Ficus elastica	475	124
Castilloa	23	43
Ceara	½	11
Other varieties	34	46
Total	1,017½	2,563

The falling off in exports of *Ficus* is attributed to the fact that many trees of this variety have been cut out by planters, who now pin their faith to *Hevea*. Statistics issued by the Java department of agriculture showed that in January, 1913, there were 220,578 acres under rubber in Java, of which 187,535 were in *Hevea*.

RUBBER EXPORTS FROM SUMATRA.

Rubber exports from the east coast of Sumatra have largely increased during the last four years, having been: 1910, 539 tons; 1911, 813 tons; 1912, 1,807 tons; 1913 (estimated) 3,020 tons. Of the 230,075 acres under rubber in 1913, 220,005 were in *Hevea*.

Owing to the low price of rubber in 1913, the extension of planting was cheked in Sumatra, the tapping of new areas being postponed and close attention directed to reducing costs of production. Many of the older producing estates seem to have reduced their cost at point of shipment to 8*d*. (16.21 cents) per pound while in some cases a further slight reduction is anticipated on this figure when the trees are in full bearing.

EXPORTATION OF ADULTERATED RUBBER FROM BELGIAN CONGO PROHIBITED.

A Belgian Royal Decree prohibits the exportation of adulterated and impure rubber from the Belgian Congo, rubber of the prohibited character being subject to confiscation. All rubber presented for exportation must be accompanied by a certificate of purity.

OPENING OF THE BATAVIA EXHIBITION.

THE "Indische Mercuur" of October 23 contained a Reuter's cable from Batavia to the effect that the Governor General had just opened the International Rubber Exhibition. It was added that almost all nations were represented.

A number of papers were to be read at the exhibition, including the following:

"What Rubber Manufacturers Want in Crude Rubber," by H. C. Pearson, Editor of THE INDIA RUBBER WORLD.

"The Significance of Branching in Young *Hevea* Trees," by W. J. Gallagher.

"Planting Distances for *Hevea*," by C. M. Hamaker, Kiara Pajoeng, Java.

"Tapping and Tapping Systems," by F. G. Spring, Kuala Lumpur, F. M. S.

"The Planning of Manurial Experiments," by W. Barrowcliff, Asst. Agr. Chemist, Dept. of Agriculture, F. M. S.

"Catch Crops and Inter-crops," by R. W. Munro.

"Catch Crops with *Hevea*," by Dr. C. J. J. van Hall, Buitzenzorg, Java.

"Diseases of *Hevea*," by Dr. C. J. J. van Hall and Dr. A. A. L. Rutgers, both of Buitzenzorg, Java.

"Preparation of Rubber of Light Color," by Dr. A. J. Ultee, Djember, Java.

"Manuring of *Hevea*," by Dr. A. J. Ultee, Djember, Java.

MR. LAMPARD ON FORWARD SALES.

At the last meeting of the Sialang Rubber Estates, Mr. C. A. Lampard urged the advisability of forward contracts for crude rubber. One reason was the need of affording the manufacturer the opportunity of providing for his future requirements. Were this denied him, he would buy wild rubber, which is what plantation owners desire to prevent. Their policy was to get their rubber into all the world's factories, and this end could best be accomplished by selling ahead a portion of their output as they found a means of doing so.

SELECTION IN HEVEA.

In dealing with this subject, the "Tropical Agriculturist," of Colombo, remarks that as the rush of planting is over the selection of seed is a point calling for the careful attention of rubber companies.

The pre-eminence of Java in cinchona has been attributed to the selection of the highest yielding trees. At Peradeniya two acres have been planted in rubber with seed from the old Heneratgoda tree which yielded 386 pounds of dry rubber in 4½ years. When old enough to tap, the yields will be carefully recorded and any poor producers removed, selection being based on yield.

It has been proposed for estates to set aside one or two acres to be planted with seeds from the trees which have shown the best yields. Any trees which have proved below the standard would be cut out, so as not to risk deterioration in the succeeding generation.

SPOTTING OF RUBBER.

In a bulletin on the above subject, Mr. A. Sharples, Assistant Mycologist of the Department of Agriculture, Federated Malay States, remarks that the spottings and discolorations in plantation rubber are mostly due to common saprophytic fungi.

Rubber prepared from latex diluted with water shows a greater tendency towards spotting than that from undiluted latex. Any addition of coagulant above the minimum necessary also increases this spotting tendency.

BRAZIL'S NEW PRESIDENT INAUGURATED.

Dr. Wenceslau Braz Pereira Gomes was inaugurated President of Brazil on November 15, at Rio Janeiro. The ceremony, which took place in the Senate Chamber, was attended by members of Parliament, the diplomatic corps and many prominent citizens.

MIGUEL P. SHELLEY.

AMONG the interesting people who have recently come to New York is Mr. Miguel P. Shelley, who for the last 23 years has been associated with the crude rubber industry in Pará. His career in South America, both in the gathering and exportation of rubber and in other industries, has been varied and is most interesting. It is a good illustration of the influence of early reading upon one's future.

The books of adventure of Jules Verne and Captain Mayne Reid inspired him as a boy with the desire of seeing Brazil, and especially of visiting the Amazon Valley with its wild natural life. The opportunity for gratifying this desire arrived early in life, when as he was about to be admitted to a commercial college in Berlin the advertisement of one Dr. Prado, a Brazilian, appeared in a local paper, for a young man who spoke English, German, French and Russian, to take charge of a colonizing party for a coffee plantation at São Paulo. He applied for and secured the position.

MIGUEL P. SHELLEY.

After a year's work on the plantation his services were no longer needed, because the laborers had learned to do the necessary work without the aid of an interpreter. During this time he learned Portuguese, Spanish and a little Italian. His next employment was at São Paulo on the staff of the German newspaper "Neue Freie Presse," and later he became traveling salesman for the paper and its accessory printing establishment.

In 1891, when a revolution broke out in Brazil, he traveled north to Pará. There he was engaged by a general brokerage and auctioneering establishment, where he worked for 5 years. But knowing that the principal business of Pará was rubber, he determined to make this article the subject of special study. The chance came when Chavez Hermanos, the largest owners of rubber estates in Rio Madeira, requiring a general clerk for their different *seringals*, he obtained this position, learning there the rudiments of the rubber industry. For a few months, in order to learn the work practically, he worked as a laborer, starting with location of trees, or forming an *estrada*, tapping them and fuming the latex. Later he became manager of the business in Pará where they were established as *aviadores*, supplying mostly their own needs.

In 1899, during the financial crisis in Brazil, the firm had to close up its business at Pará. Mr. Shelley then came to the United States, commissioned by the mayor of Pará, Senador Lemos, to buy beef for the State so that it could establish an opposition to the meat merchants who had been raising the price abnormally. His undertaking being successful, after a few shipments the merchants lowered the price and he returned to Pará. There Senador Lemos needed a manager for his newly organized political paper "O Jornal" and Mr. Shelley was appointed to this position. The paper was such a success that it showed a fine profit after a year's business without financially depending on the party. During this time he studied law and was graduated by the "Instituto Civico Juridico Paes de Carvalho."

In 1909 he visited New York again and during his stay contributed several articles to THE INDIA RUBBER WORLD. The following year he returned to Pará and established a commercial paper for North Brazil to specially treat of rubber, "O Commercio Norte-Brazileiro." This paper gained wide popularity, because of the great space it gave to carefully tabulated statistics and to commerce and because it foretold a year and a half in advance the drop in price of rubber to one dollar from three. It also foretold that the production of rubber in Ceylon would be 75,000 tons for 1915, and the price 50 cents and prophesied the effect of this competition on the Brazilian trade.

After a year's hard work and fighting the paper had to be dropped because of Mr. Shelley's friendly connection with Senador Lemos and the political uprising against him. He was then called by the well-known rubber expert, J. A. Mendes, to co-operate with him in re-establishing the firm of J. Marques, which had been affected by cornering the 3,000 tons of rubber on account of the Banco do Brazil (known as the Syndicate J. Marques). The greatest part of the stock was sold at good prices and the firm of J. Marques, from one of small importance, became the second in the Amazon.

When Secretary of State Elihu Root visited Pará the report which Mr. Shelley published and telegraphed to the Brazilian newspapers on his interview, showing the friendly feelings which America wished to maintain with Brazil, resulted in his receiving a most hearty welcome at Rio de Janeiro.

BRAZILIAN IMPORTS OF ELECTRICAL CABLE.

Statistics recently issued by the Merchants' Association of New York give the amount of electrical cable imported into Brazil during 1913 as having a value of considerably over $800,000. The countries from which these imports were made and the value of the electrical cable from each country are shown in the table below, from which it will be noticed that the United Kingdom sent Brazil two and a half times as much cable as the United States.

From	Electrical Cable
United States	$162,317
United Kingdom	408,002
Germany	166,578
France	.....
Other countries	85,973
Total	$822,870

COMPARATIVE FIGURES ON EXPORTS FROM BRAZIL.

The following table shows the quantity of rubber exported from Brazil in August and September of the present year and in the same months of 1913:

	Pounds	Value
August, 1914	3,333,095	$1,627,384
August, 1913	4,791,952	2,712,451
September, 1914	5,716,856	2,720,910
September, 1913	4,899,600	2,762,462

COTTON PLANTING IN SOUTH AMERICA.

A new company under the name of the Dutch West Indies Cotton Growing Co. has been established in Holland for the object of raising cotton on the island of St. Eustatius, Dutch Windward Islands.

Previous to the declaration of war, a company (styled "La Oriental") was formed in Brussels for the establishment in the Department of the Rio Negro, Uruguay, of a cotton planting colony, in connection with a thread and textile factory.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

THE WAR AND THE BALATA INDUSTRY: HARD HIT.

THE balata season is now practically at an end. The laborers are returning from the hinterland for the Christmas holiday and bleeding operations have been suspended. The season has, on the whole, been a fairly good one, from a producing point of view, but from a selling point would have been more successful had not the war broken out and upset the market. Producers are now overcoming their anxiety with regard to exporting, and during the past two months fairly heavy shipments have been made. The government not having seen its way clear to provide a guaranty scheme against losses, producers have resolved to pay war risks on exports. With hundreds of laborers coming down from the grants to receive their earnings for the season, companies have had to convert their balata into cash. The margin of profit being small, the market unsettled and the cost of production increased by the necessary payment of war risks, the season, from which so much was expected, will probably prove not to have been so very profitable. This is doubly unfortunate, for after several years of drought the present season, during which weather conditions have been more favorable, was looked to to recoup the losses that producers have sustained during recent years. The result is that the balata industry still lacks that element of stability which would cause it to be regarded as one of the colony's industrial props. It has during the past five or six years passed through a very trying period. The rubber boom, with its inflated prices and the consequent exorbitant demands by labor, did it no good service, and the years of drought that followed aggravated the mischief. Now, when the opportunity for recovery presented itself, war has broken out and demoralized the market.

The war will have another depressing effect, namely, that it postpones for an indefinite period the hinterland railway project, the improvement of hinterland communications being a very important factor in the successful prosecution of the industry. Nevertheless, these things act only as a setback. Speaking at the quarterly meeting of the Chamber of Commerce the other day, the president, A. P. Sherlock, dealing with the effect of the war upon the industrial situation, said that the council had approached the government asking that assistance be given the gold, diamond and balata industries by advancing money to enable them to be carried on as formerly. That was at the time when it was difficult to make the usual financial arrangements. The government did not consider the situation sufficiently critical and, as regards the gold industry, he believed that there was no difficulty in that, although the diamond and balata industries were suffering severely at the moment. The balata industry, he was sorry to say, had been seriously affected by the war, but he could not help thinking that this condition was only temporary, because there must be an enormous waste, to make up for which a corresponding demand for balata must soon arise. arise.

The balata export to September 23 was 883,392 pounds, as compared with 829,157 pounds to the same period last year. These figures may be expected to show an improvement before the end of the year, but there is reason to believe that if the war had not caused nervousness the exports this year would have reached record figures.

TAPPING EXPERIMENTS—SATISFACTORY RESULTS.

At a meeting of the Board of Agriculture, held recently, Professor J. B. Harrison, Director of Science and Agriculture, supplied figures in connection with the results of recent experiments. He announced that from November, 1913, to July, 1914, 983 pounds of wet Pará rubber had been obtained at the North Western station from 279 trees. This was equivalent to about 700 pounds dry rubber, giving a return of over 2 pounds per tree, being a very satisfactory yield for rubber trees tapped for the first time. He also reported that the rubber trees the Board had planted at Christianburg, on the Demerara river, had made very good progress during the last two years. At one time it appeared that the experiments would be a failure, but they now promised to be a success. These trees were 4½ to 5½ years old, and he would like the consent of the Board to tap them for experimental purposes. It was decided that these trees should be tapped. The agricultural expert of the "Daily Chronicle," commenting upon these returns, says: "It is gratifying to note that the results of the tapping of the *Hevea Brasiliensis* trees growing on the experimental fields at the North Western station were particularly encouraging. A return of 700 pounds of rubber from 279 trees at the first tapping is a distinct success and bears out the contention which has been expressed in these notes for the last ten years and more, that there is every reason to believe that rubber can be grown successfully in British Guiana. Had the Board of Agriculture been more active we should have known this in time to have shared in the great rubber boom. However, better late than never."

PANAMA RUBBER EXPORTS.

Exports of crude rubber from the Republic of Panama to the United States for 1912 represented $46,600 and for 1913, $19,016. The bulk of the shipments was from the consular district of Panama City, from which the rubber exports for the two years named amounted to $43,800 and $17,313.

Balata, shown separately, figures as $20,592 and $108,920 for the years 1912 and 1913.

HONDURAS RUBBER EXPORTS.

The rubber exports of the Republic of Honduras for the fiscal year ended July 31, 1913, represented $35,630, of which amount shipments to the United States were $33,797. This amount was less than one half that of the preceding annual period.

GUATEMALAN RUBBER EXPORTS.

Guatemalan exports of rubber amounted in 1913 to 200,006 pounds, value $100,323. Of this sum the United States' share was $39,960, or about half that of 1912.

ECUADOR'S RUBBER SHIPMENTS.

The value of Ecuador's rubber shipments is shown as follows by Consul General Frederic W. Goding, of Guayaquil:

	Pounds	Value
1912	.....	$698,965
1913	427,732	178,754

NICARAGUA'S RUBBER EXPORTS TO UNITED STATES.

Consul Harold D. Clum, of Corinto, reports exports of rubber from that point as follows: 1911, $320,335; 1912, $182,272; 1913, $100,523. From the San Juan del Sur district they were: 1912, $119,919; 1913, $112,056.

The above-named points combined deal with 86 per cent. of the total exports.

Total exports of rubber from Nicaragua to the United States represented a value in September last of $14,864, against similar exports for September, 1913, of $2,936. During August, $12,693 worth of rubber was exported from Nicaragua to this country, against $4,016 worth in the preceding August.

EXPORTS OF BALATA FROM VENEZUELA.

Exports of balata from Venezuela to the United States for the months of August and September, 1913 and 1914, are reported by the American Minister at Caracas as follows:

	Pounds	Value
August, 1914	1,188,000	$44,001
August, 1913	2,354,000	95,722
September, 1914	1,936,000	53,268
September, 1913	132,000	5,211

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED OCTOBER 6, 1914.

No. 1,112,568. Vehicle wheel rim. F. L. Sessions, Lakewood, assignor to The Standard Welding Co., Cleveland—both in Ohio.

1,112,596. Means for tire inflation. L. Burggraf, Jr., Oglesby, Ill.

1,112,603. Vehicle wheel rim. C. W. Gressle, assignor to The Standard Welding Co.—both of Cleveland, Ohio.

1,112,615. Air containing body for air craft. F. D. Hollidge, Washington, D. C.

1,112,635. Resilient heel. V. May, Chicago, Ill.

1,112,718. Spring wheel. J. O. Nelson, Ashtabula, Ohio.

1,112,749. Rubber Heel. E. S. Abbott, Malden, Mass.

1,112,772. Composition containing annealed steel wool and rubber. J. P. Crane, Chicago, Ill.

1,112,865. Portable buffer. W. C. Stevens, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,112,881. Life preserver and trunk. N. G. Abbate, Baltimore, Md.

1,112,931. Resilient wheel. B. R. Pilcher, Dotham, Ala.

1,112,932. Cushioned heel for foot gear. J. Preizer, Monaca, Pa.

1,112,938. Process for the improvement of inferior grade rubbers. D. Spence and W. F. Russell, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

1,112,942. Cushioned heel. F. Stoller, Kittanning, Pa.

1,113,009. Sectional core for hollow rubber articles. T. Howard and G. B. Clegg—both of Providence, R. I.

1,113,020. Writer's arm rest. S. J. King, Belton, S. C.

1,113,036. Tire. H. E. Mitchell, Coon Rapids, Iowa.

1,113,069. Atomizer. S. Trask, San Francisco, Cal.

1,113,074. Life saving suit. F. B. Voegeli, Mansfield, Mass.

1,113,083. Pessary. M. B. Arendell, McAlester, Okla.

Design.

46,506. Tire. J. E. Lee, Conshohocken, Pa.

Trade Marks.

75,989. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Compass.* For belting.

75,995. The Goodyear Tire & Rubber Co., Akron, Ohio. The words *Red Wing.* For rubber packing for machinery.

80,072. The Sterling Gum Co., Inc., New York, N. Y. The words *Golf Ball.* For chewing gum.

ISSUED OCTOBER 13, 1914.

1,113,266. Boot ventilator. R. Wachter, Dresden, Germany, assignor to Sponge Rubber Inner Heel Co., New York, N. Y.

1,113,356. Wheel and tire therefor. H. Kitcher, Toronto, Ontario, Canada.

1,113,446. Shoe for ladders. C. D. Kline and E. Nall, assignors to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,113,447. Wrapping machine. C. Kuentzel, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,113,513. Machine for covering bead cores. W. C. Tyler and E. Nall, assignors to The Goodyear Tire & Rubber Co.—all of Akron, Ohio.

1,113,614. Colored caoutchouc substances and process of making same. K. Gottlob, assignor to Farbenfabriken, vorm. Friedr. Bayer & Co.—Both of Elberfeld, Germany.

1,113,630. Process for the production of caoutchouc substances. F. Hofmann and C. Coutelle, assignors to Farbenfabriken, vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,113,631. Production of caoutchouc substances. F. Hofmann and C. Coutelle, assignors to Farbenfabriken, vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,113,645. Cushion heel. E. Jones, Indianapolis, Ind.

1,113,695. Renewable rubber heel device. W. M. Sanford, Hartford, Conn.

1,113,759. Colored caoutchouc substances and process of making same. R. Ditmar, Gratz, Austria-Hungary, assignor to Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany.

1,113,831. Upper for tennis shoes. C. H. Roper, Belmont, assignor to Hood Rubber Co., Watertown—both in Mass.

1,113,843. Fountain shampoo comb. Gertrude Smith, Valdosta, Ga.

1,113,912. Core for resilient wheel tires. F. V. Roesel and C. H. Franks—both of Akron, Ohio.

1,113,925. Pneumatic tire mold. G. E. Batcheller, Mount Vernon, N. Y.

1,113,934. Tread for resilient tires. E. F. Edgecomb, Cuyahoga Falls, Ohio.

Designs.

46,537. Vehicle tire. W. D. Morris, assignor to The Republic Rubber Co.—both of Youngstown, Ohio.

46,538. Vehicle tire. W. D. Morris, assignor to The Republic Rubber Co.—both of Youngstown, Ohio.

Trade Marks.

78,589. Puncture Seal Manufacturing Co., Dayton, Ohio. The word *Zimco.* A puncture proofing substance for the inner tube of a pneumatic tire.

78,898. The Toronto Rubber Co., Toronto, Ohio. The word *Ae-Onite.* For hoof pads.

79,141. The St. Joseph Paper Co., St. Joseph, Mo. The word *Weilow.* For rubber erasers.

79,465. E. G. Stearns, Chicago, Ill. An illustration of a spade and shovel with the words *Old Reliable.* For rubber boots and shoes.

80,209. The Republic Rubber Co., Youngstown, Ohio. The word *Staggard.* For elastic tires.

ISSUED OCTOBER 20, 1914.

1,114,052. Fountain pen. W. A. Sheaffer, Fort Madison, Iowa.

1,114,161. Spring wheel. W. L. Mann, St. Joseph, Mo.

1,114,236. Tire vulcanizing mold. M. A. Dees and N. L. McLeod, assignors to American Tire Co., St. Louis, Mo.

1,114,276. Resilient wheel. J. B. Lynch, Syracuse, N. Y.

1,114,280. Mold for pneumatic tires. N. W. McLeod, St. Louis, Mo., and M. A. Dees, Pascagoula, Miss., assignors to American Tire Co., St. Louis, Mo.

1,114,302. Cushion heel. S. D. Smith, East Dedham, assignor to J. C. Kennedy, Boston—both in Mass.

1,114,306. Solid rubber tire. J. G. Stidder, Harrow, England.

1,114,353. Sliding shoe for furniture. W. T. Hight, Boston, and G. W. Hight, Jr., Quincy—both of Mass.

1,114,443. Tire casing. W. Bryant and J. J. McCann—both of Winnipeg, Manitoba, Canada.

1,114,556. Tire sleeve. F. Vitali, Healdsburg, Cal.

1,114,561. Syringe. A. E. Wilde, New York, N. Y.

1,114,600. Resilient tire. J. Gaynor, New York, N. Y.

1,114,685. Pneumatic heel for boots and shoes. G. T. T. Freeman, Southsea, England.

Design.

46,568. Sole for footwear. W. B. Hopwood, assignor to The Beacon Falls Rubber Shoe Co.—both of Beacon Falls, Conn.

Trade Marks.

63,462. Hood Rubber Co., Boston, Mass. A black circle with the words *Bulls Eye.* For rubber boots and shoes.

77,863. Herman Moritz & Excelsior Shrinking Co., Inc., New York, N. Y. An oblong with the word *Knorain* in some. For raincoats.

78,660. Rogers Peet Co., New York, N. Y. The word *Gymkhana.* For baseball, basket ball, tennis balls, exercisers, etc.

80,015. Protectair Manufacturing Co., Wilmington, Del., and Philadelphia, Pa. Representation of a wheel and pneumatic tire with the word *Protectair* on the tire. A liquid for the sealing of punctures in pneumatic tubes.

80,313. American Lead Pencil Co., New York, N. Y. The word *Velvet.* For rubber erasers.

80,366. Millwall Rubber Co., Ltd., London, England. The word *Pax.* For rubber heels and soles.

80,548. Plymouth Rubber Co., Canton, Mass. A knot with the word *Slipknot* underneath it. For rubber heels for boots and shoes.

81,114. The Worthington Ball Co., Elyria, Ohio. The word *King.* For golf balls.

81,115. The Worthington Ball Co., Elyria, Ohio. The words *Queen Bee.* For golf balls.

81,116. The Worthington Ball Co., Elyria, Ohio. The initial *A* within quotation marks. For golf balls.

81,117. The Worthington Ball Co., Elyria, Ohio. The word *Ring.* For golf balls.

81,118. The Worthington Ball Co., Elyria, Ohio. The word *Jack.* For golf balls.

ISSUED OCTOBER 27, 1914.

1,114,732. Machine for making tire casings. F. B. Converse and F. A. Kress—both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

1,114,739. Life preserver. M. Dobinch, Nanty Glo, Pa.

1,114,819. Shoe bottom filler and method of making. A. Thoma, Cambridge, Mass., assignor to North American Chemical Co., New York, N. Y.

1,114,841. Composition for and process of revivifying and preserving rubber. A. A. Wright, Oakland, assignor to The Resilia Corporation, San Francisco—both in California.

1,114,863. Eraser. R. A. Costello, Chicago Heights, Ill.

1,114,930. Spring Wheel. F. Stitzel, Louisville, Ky.

1,114,965. Demountable rim. J. C. Cole, assignor to Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,115,015. Tire. W. J. Peterson, Brooklyn, N. Y.

1,115,031. Process for treating rubber. G. Staunton, Muskegon, Mich.

1,115,082. Cushioned pneumatic tire. J. A. Meunier, Paris, France.

1,115,094. Life preserver. M. Nowacki, Camden, N. J.

1,115,102. Time stamp. G. E. Perry, Chicago, Ill.

1,115,107. Vaginal Syringe. C. O. Rice, Denver, Colo.

1,115,224. Syringe. C. D. McAllum, De Kalb, Miss.

1,115,240. Method of manufacturing resilient articles. L. T. Petersen, Youngstown, Ohio.

1,115,409. Method of constructing pneumatic tires. F. S. Dickinson, New York, N. Y.

1,115,430. Pneumatic tire. O. K. Hoppes, Tamaqua, Pa.

Designs.

46,592. Rubber brush. O. Eick, St. Louis, Mo.

46,593. Rubber brush. O. Eick, St. Louis, Mo.

46,594. Rubber brush. O. Eick, St. Louis, Mo.

46,595. Rubber brush. O. Eick, St. Louis, Mo.

46,596. Rubber brush. O. Eick, St. Louis, Mo.

46,603. Rubber bathing cap. J. A. Murray, assignor to The Seamless Rubber Co.—both of New Haven, Conn.

Trade Marks.

71,335. The Falls Rubber Co., Cuyahoga Falls, Ohio. A shield with a water-fall scene. For inner tubes for tires, and tire casings.

72,431. Braender Rubber & Tire Co., Rutherford, N. J. Representation of the head of a bulldog with a shield clenched between its jaws with the word *Braender*. For inner tubes.

75,990. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Klingtite*. For rubber belting.

78,842. The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio. The word *Marathon*. For rubber tires, casings and tubes.

80,210. Revere Rubber Co., Providence, R. I., and Chelsea, Mass. The word *Spring-step*. For rubber horseshoes.

80,329. Hudson & Thurber Co., Minneapolis, Minn. The word *Modoc*. For rubber belting, rubber hose, etc.

80,596. Wm. Wrigley, Jr., Co., Chicago, Ill. The word *Triplemint*. For chewing gum.

80,737. The B & R Rubber Co., Brookfield and North Brookfield, Mass. The word *Fibrox*. For rubber soles and heels.

81,070. Northern Shoe Co., Duluth, Minn. The word *Robust*. For rubber and other shoes.

81,495. W. B. Price, Poughkeepsie, N. Y. The word *Repelite*. For composition for waterproofing fabrics.

81,496. W. B. Price, Poughkeepsie, N. Y. The word *Opacite*. For waterproofing composition for fabrics.

81,497. W. B. Price, Poughkeepsie, N. Y. The word *Emla*. For waterproofing composition for fabrics.

81,498. W. B. Price, Poughkeepsie, N. Y. The word *Densol*. For waterproofing composition for fabrics.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1913.
**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 7, 1914.]

13,480 (1913). Specific gravity estimating apparatus comprising ebonite tube. D. P. Battery Co. and T. C. Elliott—both of Lumford Mills, Bakewell, Derbyshire.

13,542 (1913). Rubber-tired brush for vacuum cleaning apparatus. L. N. Reddie, Bank Chambers, Southampton Buildings, London.

13,617 (1913). Covers and protectors for hats. I. Matzen, 35, Hermannstrasse, Alt-Rahlstedt, Schleswig-Holstein, Germany.

13,624 (1913). Wheel tire. C. H. Clinton, 37, Westfield Road, Surbiton, Surrey.

13,628 (1913). Blowpipe and ball. C. P. Elieson, 24, St. Mary Abbott's Terrace, Kensington, London.

*13,657 (1913). Resinous compounds. J. P. A. McCoy, 520, Holmes street, Wilkinsburg, Pa., U. S. A.

13,685 (1913). Match stands with ring of rubber. J. V. Dewis, Willoughby House, Walsall Road, Willenhall, Staffordshire.

13,760 (1913). Reducing rubber bearing plants. S. Goldreich and J. L. Palmer, 18, Ropemaker street, London.

13,790 (1913). Tapping rubber and like trees. J. J. Hutton, Newlands, Ridgeway, near Sheffield.

13,825 (1913). Isoprene. C. K. F. L. Gross, Bevon, Soon, Norway.

13,826 (1913). Synthetic caoutchouc. C. K. F. L. Gross, Bevon, Soon, Norway.

*13,923 (1913). Detachable protector for the soles and heels of boots. G. F. Matzner, 54 South Ninth street, Minneapolis, Minn., U. S. A.

13,948 (1913). Solid tire. C. S. Stone, 8, Cowdrey Road, South Wimbledon, London.

14,007 (1913). Treating rubber bearing plants. J. L. Palmer, 18, Ropemaker street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 14, 1914.]

14,081 (1913). Table game. R. Hampson, 40, Hawthorn Road, New Moston, Failsworth, near Manchester.

14,099 (1913). Cleansing device consisting of a rubber or other sponge. M. Falk, 95, Moltkestrasse, Köln, Germany.

*14,117 (1913). Elastic cords, garters, belts, etc. M. W. Schloss, 291 Seventh avenue, New York, U. S. A.

14,138 (1913). Corrugated rubber surfaces for washing clothes. R. Hogg, 20, Chepstow avenue, Liscard, Cheshire.

*14,244 (1913). Heel band of end lasting mechanism comprising a band of balata. M. Brock, 15 Woodville street, Roxbury, Mass., U. S. A.

14,251 (1913). Wheel for elastic or pneumatic tire. R. Kronenberg, Ohligs, Rhine Province, Germany.

14,281 (1913). Spring wheel with continuous outer ring and pneumatic rubber ring and like cushions. F. Hayes, 3, Beech Road, Woodhey, Rock Ferry, Cheshire.

14,332 (1913). Floats for hydro-aeroplanes comprising upper and lower members held apart by resilient means formed of india rubber. H. Farman, 167, Rue de Silly, Billancourt, Seine, France.

*14,363 (1913). Spring wheel. J. H. W. Kepler, Rural Route No. 1, West Alexandria, Ohio, U. S. A.

14,403 (1913). Tire attachment to rims. T. Dunn, 27, Louisville Road, Upper Tooting, London.

14,481 (1913). Phenol formaldehyde resins. H. Stockhausen, 25, Bakerpfad, Crefeld, and R. Gruhl, 2, Kaiser Friedrichstrasse, Charlottenburg, near Berlin—both in Germany.

14,517 (1913). Rubber impregnated packing. G. H. Cook, Lion Works, Garford street, Poplar, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 21, 1914.]

14,621 (1913). Trousers provided with an elastic gusset on each side of the waist. A. Woodbine, 16, North street, Wellingborough.

14,724 (1913). Feeding bottles. R. S. Dowell, Globe Works, Chatsworth Road, Clapton Park, London.

14,744 (1913). Spring wheel with continuous outer rigid ring and pneumatic cushions. T. Unsworth, 34, Park street, St. Kilda, Victoria, Australia.

14,789 (1913). Road paving blocks with rubber faces. A. S. Morrison, 37, Northgate, Regent's Park, London.

14,801 (1913). Vapour bath having a covering of waterproof fabric. I. Gyenes, Kaposvar, Hungary.

14,897 (1913). Fountain pens. C. Pickett, "Fernleigh," Town Green, near Ormskirk, Lancashire, and E. E. E. Emmerson, 26, Kirkland avenue, Higher Tranmere, Cheshire.

15,066 (1913). Cloaks of waterproof material. R. Meyer, Bot. 24, Barcelona, Spain.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 28, 1914.]

15,112 (1913). Game comprising rubber table pads. R. W. Buckby, 2, Gladstone street, Leicester.

15,139 (1913). Apparatus with bulb for treating diseases with radiations, etc. O. Samuely, 105, Dalmanstrasse, Charlottenburg, Germany.

15,185 (1913). Dress shields. W. R. Weeks, 1, Ramillies street, Great Marlborough street, London.

15,213 (1913). Teat cup for cow milkers. R. Kennedy, 3, Springkell avenue, Pollokshields, Glasgow.

15,249 (1913). Self sealing air tube for wheel tires. E. C. R. Marks, 57, Lincoln's Inn Fields, London.

15,447 (1913). Toothbrush holders. R. M. Withycombe, 283, Elizabeth street, Sydney, Australia.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

470,499 (June 16, 1913). Process of making fabrics for tire covers. E. Dranlutte.

470,586 (April 7, 1914). Elastic tire for vehicle wheels. W. H. Carmont.

470,647 (April 8). Hydropneumatic tire for vehicle wheels. A. F. Grenneillon.

470,653 (April 8). Rubber syringe in one piece, and its process of manufacture. J. Lick & Co.

470,717 (April 9). Pneumatic heel for footwear. G. Freeman.

470,745 (April 10). Perfected movable elastic heel and its system of attachment. F. A. Nolan.

470,833 (June 24, 1913). Process for vulcanization of rubber. J. Bastide.

470,879 (March 2, 1914). Improvements in processes and appliances for molding rubber articles. F. T. Roberts and R. H. Rosenfeld.

470,885 (March 10). System of rim for pneumatic wheels. J. E. Serste.

470,961 (April 10). Improvements in tires for vehicle wheels. W. E. Muntz.

471,002 (April 16). Mudguard for automobiles and other vehicles. A. C. Adams.

471,010 (April 16). Improvements in tires for vehicle wheels. M. Perot and J. E. Daubré.

471,175 (April 21). Elastic tire principally intended for heavy automobiles and trucks. A. Borson and A. Preuss.

471,201 (July 3, 1913). Improvement in detachable rim. A. L. F. Prat.

471,231 (April 22, 1914). Improvements in appliances for treating latex. H. A. Wickham.

471,344 (April 25). Anti-skid for automobile wheels. M. Malik.

471,403 (April 27). Machine for manufacture of gummy compounds. F. Kempter.

471,415 (April 27). Mudguard for automobiles. Quévrain and Desmedt.

471,457 (April 28). Improvements in pneumatic tires. H. A. Lepetit.

471,518 (April 30). Improvements in elastic tires for automobiles and other vehicles. H. Diamant.

471,625 (February 21). Shock absorber adaptable as a flexible wheel tire. O. J. Hobson.

471,732 (April 30). New type of tire for road vehicles. W. C. Sneyd and R. Billington.

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

279,271, Class 30b (February 1, 1911). Apparatus for making rubber objects. Elizabeth Lambert, Eisenbahnstrasse, 40, Berlin-Wilmersdorf.

279,376, Class 71a (January 31, 1914). Rubber tire treads with applied leather portions. Minna and Agatha Reich, Schillerstrasse, 2, Northeim.

279,483, Class 63c (November 23, 1913). Acoustic indication of air escaping from pneumatic tires. Haghart Sylvester Christopherson, Odense, Denmark.

279,484, Class 63c (November 30, 1912). Pneumatic wheel tires or hose. Eduard Breuer, Pilsen.

279,666, Class 63c (January 17, 1914). Pneumatic tires, in which the air tube has a thickened portion, which automatically closes punctures. Carl Lepelmann, vor dem Harttor, 13, Geldern.

279,644, Class 30d (December 5, 1913). Adjustable truss, with spherical continuation. Karl Willig, Sühl, Thüringen.

279,649, Class 39a (November 16, 1913). Mixing machine, specially for rubber. Fritz Kempter, Heinestrasse, 10, Stuttgart.

279,735, Class 30d (March 13, 1914). Appliance for prevention and cure of flat feet. Emil Huber, Kaiserslautern.

279,780, Class 39b (January 10, 1913). Process for improving synthetic products resembling rubber. Badische Anilin-und Soda Fabrik, Ludwigshafen.

279,801, Class 63c (January 9, 1914). Rubber tires with hollow chambers arranged one above another. Albert Witzel, Ludwigsburg.

279,835, Class 39b (January 28, 1913). Process for manufacture of products resembling vulcanized rubber. Badische Anilin-und Soda Fabrik, Ludwigshafen.

279,980, Class 63c (February 15, 1913). Process of manufacture of tires from discs arranged radially with respect to a ring. Divine Tire Co., Utica, N. Y.

280,025, Class 63c (February 10, 1914). Protective cover for treads of pneumatic tires. Wilhelm Dietz, Aeussere Sulzbacher Strasse, 34, Nürnberg.

RUBBER MEN ATTEND THE FIRE ENGINEERS' CONVENTION.

The convention of the International Association of Fire Engineers, held at New Orleans, Louisiana, October 20-23, was attended by many representatives of the rubber companies, who enjoy associate membership in the organization, as well as by active members. Among these representatives were the following: For the Bi-Lateral Fire Hose Co.—Clay Bird, of Chicago; Dayton Rubber Manufacturing Co.—John A. MacMillan, of Dayton, Ohio; Eureka Fire Hose Co.—S. P. Blanck, P. O. Herbert and C. B. Payne, of Atlanta, and Thos. B. Galbraith, of New York; Fabric Fire Hose Co.—A. C. Hopper, of Dallas, Texas, and J. J. Rafter, of Atlanta; Firestone Tire & Rubber Co.—Geo. A. Talbot, of Akron; The B. F. Goodrich Co.—A. H. Leavitt, Akron; Goodyear Tire and Rubber Co.—J. E. Davies, and F. H. Sawyer, of Akron; Sewell Cushion Wheel Co.—E. H. Milliken, Boston, and H. J. Sewell, Detroit.

UNITED STATES IN THE MARKET FOR DIRIGIBLES.

Announcement has been made that the United States Government is considering the purchase of four dirigible balloons for military purposes and that it has in view arrangements to assist manufacturers of this class of equipment. Several firms have been organized in this country for the construction of dirigibles.

TESTING OF RUBBER GLOVES.

IT is customary for electric light and power companies to furnish rubber gloves to those of their employes who may have occasion to work on high tension apparatus. Since it is impossible to detect by visual examination very minute defects, such as pin-holes, a high voltage test is necessary to insure that the gloves worn by the men will not break down when being used on "live" apparatus. A great many of the central station companies also test the gloves used by their men periodically so as to insure that no gloves will be in use which have been mechanically injured. Since the user depends absolutely upon the gloves for protection, it is obvious that every precaution should be taken to insure that this confidence is not misplaced.

The most usual practice in testing gloves consists in filling the gloves with water and then immersing them in a can of water. The electrodes are connected to the water in the glove and the water in the can, the electric current being applied to the electrodes and raised gradually at a uniform rate until the test voltage is applied to the glove, which varies from 3,000 to 10,000 volts, depending upon the kind and quality of glove and the service for which it is intended. The test voltages employed vary from one and one-quarter to two times the voltage of the circuit upon which the gloves are to be used. The time of application of the voltage varies from one minute to five minutes. An ammeter is connected in the test circuit and all gloves are rejected whose insulation resistance is so weak that the current flowing through the glove exceeds 10 milliamperes at 10,000 volts. It is obvious that while the current flowing through the glove may not be sufficient to cause a puncture (a puncture is simply the result of sufficient current having flowed through the glove at a defect to produce enough heat to cause destructive defects still it may be sufficient to shock the user without producing any visible effect upon the glove. Theoretically, some current flows through the glove in any case, its value depending simply upon the resistance of the glove. If the resistance is sufficiently high the current is infinitesimally small, while if the resistance is low the current becomes large and serious results follow. Obviously then the amount of permissible current should be limited, because a current which will produce a severe shock to the wearer of the glove may produce no material defect in the glove itself. The limit of 10 milliamperes has been established, as this is sufficient to produce a distinct shock. While this current in itself would not ordinarily injure a person, the muscular reaction resulting from the shock might cause a man to fall from a pole or ladder and thus injure him from the secondary cause.

GLOVE TESTING EQUIPMENT OF THE ELECTRICAL TESTING LABORATORIES, NEW YORK.

The accompanying photograph of the testing equipment at the Electrical Testing Laboratories, New York, shows the method of suspending water-filled gloves in metal cans for test.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

THIS is not an active period for the chemicals used in rubber works, and trading is along quiet lines. The situation in regard to many materials remains complicated and is not likely to clear up until a way has been found to restore the foreign materials which have been cut off. The lead pigments are holding steady and are meeting with a fairly good outlet in the various consuming channels. Linseed oil has gained in strength. Variations in the price of seed have affected the market for oil. Zinc oxide is in good demand with other trades helping the market. The spreading of mines along the shores of Europe has made uncertain the exportation of many articles which otherwise would reach here, and among these may be mentioned chalk. The situation in chalk is reflected in the market for whiting, as makers of the latter are not anxious to sell ahead till they can get stocks of raw material from England. French chalk is not on the market. Lithopone and barytes are affected by difficulties of transportation, and foreign makes have been in limited supply since the disturbance began.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.

November 30, 1914.

Aluminum flake	*lb.*	$0.01½@	
Aniline oil	*lb.*	.36 @	
Antimony, crimson, sulphuret of	*lb.*	.40 @	
Antimony, golden, sulphuret of	*lb.*	.28 @	
Arsenic sulphide	*lb.*	.12 @	
Asbestine	*ton*	16.00 @	18.00
Barytes, domestic	*ton*	21.75 @	
Bayberry wax	*lb.*	.24 @	.27
Beeswax, crude yellow	*lb.*	.30 @	.32
Benzol 90 per cent	*gal.*	.30 @	
Black hypo	*lb.*	.25 @	
Blanc fixe	*lb.*	.03⅞@	.04
Cadmium, yellow	*lb.*	1.25 @	1.50
Carbon bi-sulphide	*lb.*	.05½@	.07
Carbon gas	*lb.*	.04 @	.06
Carbon tetra-chloride, drums	*lb.*	.14 @	.16
Ceresin wax, white	*lb.*	.12 @	.22
Chalk, L. B	*lb.*	.04½@	.05½
China clay, domestic	*ton*	8.00 @	9.00
Chrome green	*lb.*	.22 @	.30
Coal tar naphtha	*gal.*	.28 @	
Corn oil	*lb.*	.05 @	
Fossil flour	*ton*	35.00 @	
Glycerine, C. P., bulk	*lb.*	.23 @	.24
Graphite	*lb.*	.40 @	.60
Green oxide of chromium	*lb.*	.35 @	
Iron oxide	*lb.*	.02 @	.08½
Infusorial earth	*ton*	30.00 @	
Ivory, black	*lb.*	.08 @	.12
Lampblack	*lb.*	.03¾@	.07
Lead, sublimed white	*lb.*	.07 @	
Lead, white (basic carbonate)	*lb.*	.05 @	.05¼
Lead, white (basic sulphate)	*lb.*	.04¾@	.05
Linseed oil, carload	*gal.*	.46 @	
Litharge	*lb.*	.05 @	.05¼
Lithopone, American	*lb.*	.03¾@	.04½
Magnesia, carbonate	*ton*	.04¾@	.05½
Magnesia, calcined, powder	*ton*	30.00 @	35.00
Naphtha, V. M. & P., deodorized	*gal.*	.09 @	
Naphtha, 70 deg	*gal.*	.23 @	
Naphtha, 76 deg	*gal.*	.26 @	
Orange mineral, domestic	*lb.*	.07¼@	.08¼
Ozokerite, refined yellow	*lb.*	.25 @	.30
Paraffine wax, domestic 120 m. p	*lb.*	.04½@	.04¾
Pumice stone, powder	*lb.*	.01½@	.02
Prussian blue	*lb.*	.46 @	.48
Rape seed oil	*gal.*	.75 @	
Red lead	*lb.*	.05½@	
Red oxide, domestic	*lb.*	.05½@	.6
Rosin oil	*gal.*	.25 @	
Shellac, fine orange	*lb.*	.16 @	.18
Soapstone, powdered	*ton*	10.00 @	12.00
Sulphur chloride, in drums	*lb.*	.06½@	
Sulphur, flowers	*cwt.*	2.20 @	2.60
Talc, American	*ton*	15.00 @	20.00
Ultramarine blue	*lb.*	.40 @	.14
Vermilion Chinese	*lb.*	.90 @	1.00
Whiting, commercial	*cwt.*	.45 @	.55
Whiting, Paris white	*cwt.*	.70 @	.75
Whiting, English cliffstone	*cwt.*	.75 @	1.00
Zinc oxide, American process	*lb.*	.05⅜@	
Zinc oxide, French process, red seal	*lb.*	.07 @	
Zinc oxide, French process, green seal	*lb.*	.07½@	
Zinc oxide, French process, white seal	*lb.*	.08 @	

THE RUBBER SCRAP MARKET.

AT the opening of the month, dealers were purchasing boots and shoes at 6½c. to 6⅝c., while mills had reduced their offers from 7¼c. to 7c., with only limited transactions at 7⅛c. Some dealers were holding out for 7¼c. Boots and shoes were, however, in quiet but steady demand, while the quantity offered was smaller than was the case in former years. Owing to the conditions of the market, the limited nature of the supply was not so apparent as would otherwise be the case. Dealers are not being offered large lots at present. At the close of the month they were finding it difficult to get supplies below 6¾c., although in a few instances they claim to have got in at 6.5c. to 6.6c. Consumers have been obliged to pay 7¼c., but the volume of business has been limited.

In auto. tires the volume of business has remained small. The price given by consumers, which at the beginning of the month was 4⅝c., declined to 4.4c., at which figure business was done, some sales having been effected at 4⅜c. Large dealers had been quoting 4½c., without finding a response from buyers, while they have been offering from 4c. to 4.2c., according to size of lots. Reports of sales to mills at 4½c. have not been confirmed. Solid tires have been quoted to dealers at 4c., while the latter have been asking consumers 4½c.

In the earlier days of the month weakness characterized the market for inner tubes, 20c. having been offered by consumers for No. 1, while dealers were holding out for 21c. and 22c., they themselves paying 20c. The absence of movement had led to an accumulation in the West. At a later period of the month, the market became somewhat firmer, dealers being in a better position and getting an average of 22½c. and 23c. delivered. No. 2 was held nominally at 12 to 13c.

Generally speaking, the prices of scrap in the concluding week of the month were steady and unchanged, reclaimers not exceeding their actual requirements.

RUBBER SCRAP PRICES PAID BY CONSUMERS FOR CARLOAD LOTS.

New York, November 30, 1914.

	Per Pound	
Boots and shoes *cents*	7⅜@	7½
Trimmed arctics	5¼@	5½
Auto tires	4⅜@	4⅝
Solid tires	5 @	5¼
No. 1 inner tubes	21 @	22
No. 2 inner tubes	11½@	12½
Red tubes	13 @	13½
Bicycle tires	2¾@	3
Irony tires	1¾@	2¼
No. 1 auto peelings	8¼@	9¼
Mixed auto peelings	6¾@	7
No. 1 soft white rubber	10¼@	
White wringer rubber	6¼@	7¼
No. 1 red scrap	9¼@	
Mixed red scrap	6¼@	7¼
Mixed black scrap	2¼@	
Rubber car springs	3¼@	
Horse shoe pads	2¼@	2¾
Matting and packing	½@	¾
Garden hose	⅝@	¾
Air brake hose	3 @	3¼
Cotton fire hose	2¼@	

Review of the Crude Rubber Market.

THE present crude rubber market is certainly a most interesting one. It is safe to say that never before was it surrounded by so many elements of uncertainty. Will the English actually retain all the plantation rubber from British colonial ports, and if they do, what will they do with receipts of 34,000 tons, during the next six months? Can England use it? Can the Allies together use it? It is six times as much rubber as England used in the corresponding six months a year ago. Then again, will the English be able to get plantation rubber or will the Turks succeed in bottling up the Suez Canal? Will the Eastern planters continue to ship rubber to England under the risks involved or will they conclude to open a new chapter in Eastern exportations and ship their rubber direct to the United States by way of the Pacific, as some has already come?

Then again, how about the American rubber manufacturers? Will this much-heralded and often banqueted Prosperity put in an early appearance, so that home orders will call for a large supply of material, or will the American manufacturer have to look to the military needs of the Allies for export orders to counterbalance a decreased home consumption, and in that event, how much crude rubber is he going to need?

It really is rather a puzzling situation and it is not to be wondered at that manufacturers find themselves in something of a quandary and that the crude rubber importers are by no means all of one mind as to the outlook.

The New York market during the first half of the month was very steady, and it was not until the trade learned of England's absolute embargo on all British-controlled rubber that a feeling of nervousness began to appear. Fine hard Pará opened the first of November at 66c., and during the first two weeks varied from 63c. to 66c., not going beyond 67c. until the 25th. On the 27th it reached 71c. and on the 28th was quoted at 70@71c.

Plantation rubber shows a marked gain for the month. First Latex opened on the first of November at 61@62c. and had advanced by the 5th to 66c. Then, upon the destruction of the "Emden." it fell again on the 14th and 16th to 60c., from which point it rose steadily until it was quoted on the 28th at 75c., with smoked sheet at 80c.

The receipts of rubber from Pará during the month amounted to 1,200 tons, with 400 tons more now afloat for December arrival. The receipts of plantation rubber amounted to 2,583 tons. It is estimated that there is now afloat from Ceylon to London about 700 tons of plantation, in three boats, namely—the "St. Egbert," "City of Delhi" and "Kabinga"; but under the present embargo of course none of this will reach the New York market.

About 250 tons of guayule were received during November, but of Pontianak there has been no receipt since September 20. About 400 tons of Pontianak are now on their way from the East to London, part of this amount being on the "St. Egbert" and part on the "Kazendi."

Advices from Germany are to the effect that all the crude rubber in that country is now being used for tires and other military equipment. The price of Plantation has reached $1.40@1.50 a pound.

What the market will do in December is anybody's conjecture. The answer would be easy if one only knew what the British Government had in its mind.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and November 30, the current date:

PARA.	Dec. 1, '13.	Oct. 31, '14.	Nov. 30, '14.
Islands, fine, new	66 @67	50@52	60@61
Islands, fine, old	.....	52@53	62@64
Upriver, fine, new	76 @77	65@66	71@..
Upriver, fine, old	.....	67@69	73@75
Islands, coarse, new	29½@30	27@28	32@33
Upriver, coarse, new	.....	47@48	52@53
Upriver, coarse, old	48 @49	.....	.....
Cameta	.....	30@31	33@35
Caucho, upper	37½@38	46@47	52@53
Caucho, lower	46 @47	41@43	50@51
PLANTATION CEYLON.			
Fine smoked sheet	65 @66	65@66	82@84
Fine pale crepe, near-by		60@61	
Fine pale crepe, forward	58 @59	61@63	75@76
Fine sheets and biscuits unsmoked	56 @57	60@61	66@68
CENTRALS.			
Corinto	.....	45@46½	46@47
Esmeralda, sausage	40 @41	44@45	46@47
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	37 @39	44@45	45@46
Panama	.....	.....	.....
Mexican plantation, sheet	.....	37@39	.....
Mexican, scrap	37 @38	40@42	45@46
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	40@42	42@44
Guayule	.....	.....	34@..
Balata, sheet	63 @64	51@52	52@53
Balata, block	44 @45	43@44	43@44
AFRICAN.			
Lopori, ball, prime	47 @48	52@55	No supply
Lopori, strip, prime	.....	.....	No supply
Aruwimi	37 @38	.....	No supply
Upper Congo, ball red	45 @46	.....	No supply
Ikelemba	.....	.....	No supply
Sierra Leone, 1st quality	45 @46	.....	No supply
Massai, red	.....	54@58	No supply
Soudan Niggers	.....	.....	No supply
Cameroon, ball	33 @40	44@45	45@..
Benguela	.....	31@33	34@..
Madagascar, pinky	.....	.....	.....
Accra, flake	20 @22	25@26	28@..
EAST INDIAN.			
Assam	.....	54@58	.....
Pontianak	6 @ 6¾	8@ 9	.....
Borneo, II, or 2nd	.....	35@..	40@..

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The market for Commercial paper has improved very much during November, with declining rates, which during the early part of the month were 6@6½ per cent. for the best rubber names and 7@7½ per cent. for those not so well known, but towards the end of the month these rates declined to about 5½@5¾ per cent. and 6@7 per cent., respectively."

NEW YORK PRICES FOR OCTOBER (New Rubber).

	1914.	1913.	1912.
Upriver, fine	$0.64@0.66	$0.73@0.83	$1.04@1.11
Upriver, coarse	.43@ .47	.47@ .49	.81@ .86
Islands, fine	.49@ .53	.67@ .72	.99@1.06
Islands, coarse	.26@ .28	.28@ .29	.53@ .56
Cametá	.29@ .32	.36@ .38	.56@ .61

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1, to October 19, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

To—	1913.	1914.
Great Britain .....*pounds*	10,808,997	13,864,349
United States	4,883,733	7,105,957
Belgium	2,991,293	2,984,009
Australia	401,913	508,073
Japan	204,541	220,700
Germany	203,516	1,037,415
Straits Settlements	86,980	42,535
Italy	38,828	1,772
Austria	30,097	.....
France	4,482	317,912
Holland	992	.....
India	881	1,050
Russia	.....	105,212
Total	19,656,253	26,188,984

(Same period 1912, 10,058,285; same period 1911, 4,487,261.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 3,037,159 pounds—2,452,851 pounds from the Straits and 572,684 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. Oct. 10.	Malacca. Sept. 30.	Penang. Aug. 31.	Port Swettenham. Sept. 30.	Total.
Great Britain..*pounds*	17,026,475	3,526,413	11,871,333	18,943,782	51,368,003
Continent	1,885,051	36,873	506,666	1,816,538	4,245,128
Japan	1,007,764	.....	.....	.....	1,007,764
Ceylon	290,245	.....	736,666	1,223,674	2,250,585
United States	8,859,565	15,878	686,667	244,209	9,806,319
Australia	83,016	.....	.....	.....	83,016
Total	29,152,116	3,579,164	13,801,332	22,228,203	68,760,815
Same period 1913.	19,751,635	.....	9,939,467	21,118,796	50,809,898
Same period 1912.	9,998,689	.....	5,851,230	14,917,100	30,767,019
Same period 1911.	4,538,628	.....	3,042,612	8,525,001	16,106,241

FEDERATED MALAY STATES RUBBER EXPORTS.

According to information received by the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of September amounted to 2,903 tons as compared with 1,850 tons in the previous month and 2,000 tons in the corresponding month last year.

Appended are the comparative statistics for 1912 and 1913.

	1912.	1913.	1914.
January .....*tons*	1,218	2,131	2,542
February	1,212	1,757	2,364
March	1,379	1,737	2,418
April	1,020	1,626	2,151
May	1,007	1,225	2,069
June	1,029	2,005	2,306
July	1,204	1,781	2,971
August	1,633	2,363	1,850
September	1,326	2,000	2,903
Total	11,028	16,625	21,574

STRAITS SETTLEMENTS RUBBER EXPORTS.

A cable received by the Malay States Information Agency from the Colonial Secretary, Singapore, states that the export of plantation rubber during the month of September amounted to 1,602 tons as compared with 1,325 tons in the previous month and 1,057 tons in the corresponding month last year.

The following table gives the comparison month by month for three years:

	1912.	1913.	1914.
January .....*tons*	253	784	1,181
February	274	743	1,703
March	427	898	1,285
April	387	762	1,548
May	431	814	1,309
June	398	812	1,480
July	380	1,120	1,584
August	729	1,315	1,325
September	597	1,057	1,602
Total	3,876	8,305	13,017

Singapore Plantation Rubber Auctions.

The sale of September 28 comprised 85 tons, of which 55 were sold. At that of October 6 about 60 tons out of 90 changed hands, while on October 13 the proportion sold was still larger, being 72 out of 90 tons.

World's Visible Supply Brazilian Rubber.

	Pará.	Caucho.
September 30, 1914.....*tons*	3,490	480
Against same date, 1913.....	4,250	160

MOVEMENTS OF PLANTATION RUBBER.

	1913.	1914.
London arrivals January 1 to September 30..*tons*	23,180	30,490
London deliveries January 1 to September 30...	21,940	30,120
London stocks, August 31.....	3,109	3,505
London arrivals, September.....	2,910	3,495
	6,019	7,000
London deliveries in September.....	2,755	3,435
London stocks, September 30.....	3,264	3,565

The October report of Zarges, Berringer & Co., Para, gives the total exports of india rubber and caucho from Para, Manaos and Iquitos as 3,469,276 kilograms.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

OCTOBER 29.—By the steamer *Denis* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	233,500	55,400	56,400	32,400=	377,700
Meyer & Brown.....	146,000	23,300	101,900	56,200=	327,400
General Rubber Co.....	128,700	34,100	19,100	1,400=	183,300
Henderson & Korn.....	110,200	22,300	35,300	7,600=	175,400
H. A. Astlett & Co.....	31,600	22,200	36,300	6,800=	96,900
Robinson & Co.....	39,600	18,100	10,600	600=	68,900
G. Amsinck & Co.....	35,800	3,900	1,200	.....=	40,900
Johnstone, Whitworth & Co..	36,100	.....	.....	.....=	36,100
Aldens' Successors, Ltd.....	20,160	1,120	15,246	.....=	36,526
Hagemeyer & Brunn.....	12,500	1,100	7,800	.....=	21,400
Crossman & Sielcken.....	9,800	1,400	1,500	900=	13,600
Rumsey & Greutert Co., Inc.	.....	.....	1,500	.....=	1,500
Total	803,960	182,920	286,846	105,900=	1,379,626

NOVEMBER 9.—By the steamer *Francis* from Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	31,100	2,900	56,100	.....=	90,100
Meyer & Brown.....	58,700	4,700	23,500	.....=	86,900
Henderson & Korn.....	20,700	700	25,100	.....=	46,500
H. A. Astlett & Co.....	11,800	5,000	19,100	300=	36,200
Export	101,400	.....	.....	.....=	101,400
Total	223,700	13,300	123,800	300=	361,100

NOVEMBER 19.—By the steamer *Gregory* from Iquitos:

Meyer & Brown.....	19,500	2,900	6,600	26,400=	55,400
H. A. Astlett & Co.....	21,900	8,100	7,400	20,900=	58,300
H. C. Kupper.....	42,800	.....	4,200	26,600=	73,600
G. Amsinck & Co.....	78,800	21,600	12,500	94,100=	207,000
Rumsey & Greutert Co., Inc.	9,800	.....	800	2,100=	12,700
W. R. Grace & Co.....	20,800	.....	2,000	39,700=	62,500
Johnstone, Whitworth & Co..	34,600	2,800	8,900	15,000=	61,300
Frederick Probst & Co.....	3,400	.....	1,700	7,000=	12,100
Col. Bank of Spanish America	3,900	.....	1,100	3,600=	8,600
Total	235,500	35,400	45,200	235,400=	551,500

NOVEMBER 19.—By the steamer *Gregory* from Pará and Manaos:

Arnold & Zeiss.....	82,600	5,900	40,100	1,100=	129,700
Meyer & Brown.....	92,700	20,800	55,100	12,400=	181,000
General Rubber Co.....	69,300	9,900	2,900	.....=	82,100
W. R. Grace & Co.....	40,000	2,600	700	.....=	43,300
H. A. Astlett & Co.....	76,600	9,100	20,200	14,600=	120,500
Aldens' Successors, Ltd.....	16,866	7,120	51,653	11,111=	86,750
Henderson & Korn.....	79,900	11,900	23,100	800=	115,700
Hagemeyer & Brunn.....	.....	.....	56,700	72,200=	128,900
G. Amsinck & Co.....	7,900	400	5,900	1,800=	16,000
Total	465,866	67,720	256,353	114,011=	903,950

NOVEMBER 19.—By the steamer *Sao Paulo* from Pará:

Arnold & Zeiss.....	76,900	10,000	54,600	.....=	141,500
General Rubber Co.....	123,400	10,800	4,400	.....=	138,600
Meyer & Brown.....	114,700	7,500	16,700	24,100=	163,000
Hagemeyer & Brunn.....	5,000	400	5,300	.....=	10,700
Henderson & Korn.....	11,800	6,100	25,700	4,800=	48,400
H. A. Astlett & Co.....	.....	.....	7,200	.....=	7,200
Aldens' Successors, Ltd.....	.....	.....	6,547	.....=	6,547
G. Amsinck & Co.....	16,600	1,100	5,500	.....=	23,200
Total	348,400	35,900	125,947	28,900=	539,147

PARA RUBBER VIA EUROPE.

POUNDS.

OCTOBER 30.—By the *Cedric*=Liverpool:
Rubber Trading Co. (fine) 2,200

OCTOBER 30.—By the *Franconia*=Liverpool:
Johnstone, Whitworth & Co. (fine) 4,500

OCTOBER 31.—By the *Lusitania*=Liverpool:
Johnstone, Whitworth & Co. (coarse) ... 22,500

NOVEMBER 4.—By the *St. Louis*=Liverpool:
W. R. Grace & Co. (fine) 11,200

NOVEMBER 14.—By the *Baltic*=Liverpool:
Henderson & Korn (fine) 22,500

NOVEMBER 16.—By the *New York*=Liverpool:
Arnold & Zeiss (fine) 6,000

NOVEMBER 21.—By the *Adriatic*=Liverpool:
Henderson & Korn (coarse) 45,000

NOVEMBER 23.—By the *Philadelphia*=Liverpool:
Henderson & Korn (coarse) 11,200

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

POUNDS.

OCTOBER 29.—By the *Almirante*=Cartagena:
R. Castillo 2,000
Caballero & Blanco 1,500 3,500

OCTOBER 30.—By the *Advance*=Colon:
Piza, Nephews & Co. 3,000
G. Amsinck & Co. 800
Harburger & Stack 200 4,000

NOVEMBER 2.—By the *Morro Castle*=Mexico:
J. A. Medina & Co. 1,000

NOVEMBER 2.—By the *Morro Castle*=Tampico:
Federico Nano *27,000

NOVEMBER 4.—By the *Panama*=Colon:
G. Amsinck & Co. 4,400
Wessels, Kulenkampff & Co. 2,200
Camacho, Roldau & Van Sickel.. 2,300
A. M. Capen's Sons 1,700
Mecke & Co. 1,500
Pablo Calvet & Co. 900 13,000

NOVEMBER 4.—By the *Antilles*=New Orleans:
E. Steiger & Co. 6,000

NOVEMBER 7.—By the *Monterey*=Mexico:
R. Fabien & Co. 500
Federico Narro *27,000 27,500

NOVEMBER 7.—By the *Manzanillo*=Mexico:
Harburger & Stack 11,000
American Trading Co. 10,500
H. Marquardt & Co. 1,500 23,000

NOVEMBER 7.—By the *Zacapa*=Colon:
W. R. Grace & Co. 25,000

NOVEMBER 11.—By the *Alliance*=Colon:
Lawrence Johnson & Co. 10,000
Pablo, Calvet & Co. 3,600
G. Amsinck & Co. 600 14,200

NOVEMBER 12.—By *El Mundo*=Galveston:
Various *25,000

NOVEMBER 13.—By the *Mexico*=Mexico:
Madero Bros., Inc. *67,000
E. Steiger & Co. 200
H. Marquardt & Co. 200
Various 5,000 72,400

NOVEMBER 13.—By the *Comus*=New Orleans:
Various 3,500

NOVEMBER 14.—By the *Momus*=New Orleans:
E. Steiger & Co. 17,000

NOVEMBER 16.—By the *Siamese Prince*=Bahia:
Adolph Hirsch & Co. 35,000

NOVEMBER 16.—By the *Colon*=Colon:
G. Amsinck & Co. 12,200
Lawrence Johnson & Co. 7,000
Andean Trading Co. 1,300
Various 13,500 34,000

NOVEMBER 18.—By the *Trent*=Colon:
A. M. Capen's Sons 5,500
Hispano American Sales Co. 1,500 7,000

NOVEMBER 18.—By *El Alba*=Galveston:
Various *40,000

NOVEMBER 21.—By the *Esperanza*=Tampico:
Federico Narro *56,000
Madero Bros., Inc. *67,000 *123,000

NOVEMBER 19.—By the *Pastores*=Colon:
Pottberg, Ebeling & Co. 1,000
H. Wolff & Co. 500
G. Amsinck & Co. 200 1,700

NOVEMBER 19.—By the *Pastores*=Colon:
G. Amsinck & Co. 25,000
M. Rodriguez 95,000
Eastmond & Co. 1,500 121,500

NOVEMBER 23.—By the *Saramacca*=Cortez:
Eggers & Heinlein 1,000

NOVEMBER 24.—By the *Carrillo*=Port Limon:
Isaac Brandon & Bros. 700

NOVEMBER 24.—By the *Advance*=Colon:
Wessels, Kulenkampff & Co. 1,200
Harburger & Stack 300 1,500

AFRICAN.

POUNDS.

OCTOBER 26.—By the *Minnehaha*=London:
Arnold & Zeiss 45,000
Aldens' Successors, Ltd. 7,307 52,307

OCTOBER 27.—By the *Chicago*=Havre:
Meyer & Brown 70,000

OCTOBER 27.—By the *Philadelphia*=London:
Aldens' Successors, Ltd. 22,622

OCTOBER 30.—By the *Franconia*=Liverpool:
Arnold & Zeiss 11,200

OCTOBER 31.—By the *Lusitania*=Liverpool:
Meyer & Brown 2,500

NOVEMBER 2.—By the *Minnetonka*=London:
Aldens' Successors, Ltd. 8,900

NOVEMBER 9.—By the *St. Paul*=Liverpool:
Arnold & Zeiss 22,500
Various 2,000 24,500

NOVEMBER 9.—By the *Menominee*=London:
Arnold & Zeiss 11,200
Various 9,000 20,200

NOVEMBER 13.—By the *Frankmere*=Lisbon:
Various 75,000

NOVEMBER 14.—By the *Baltic*=Liverpool:
Rubber Trading Co. 7,000
Rubber & Guayule Agency, Inc.. 3,500 10,500

NOVEMBER 16.—By the *New York*=Liverpool:
Arnold & Zeiss 7,000

NOVEMBER 17.—By the *Transylvania*=Liverpool:
Robinson & Co. 4,500

NOVEMBER 21.—By the *Adriatic*=Liverpool:
Rubber Trading Co. 11,200

NOVEMBER 25.—By the *Franconia*=Liverpool:
Aldens' Successors, Ltd. 112,000
Meyer & Brown 9,000 121,000

NOVEMBER 25.—By the *King George*=Lisbon:
Ed. Maurer 45,000
W. Stiles 16,500 61,500

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

OCTOBER 10.—By the *Minnetonka*=London:
Aldens' Successors, Ltd. *39,994

OCTOBER 26.—By the *Minnehaha*=London:
Meyer & Brown *70,000
Henderson & Korn *50,000
Raw Products Co. *2,500
Ed. Maurer *45,000
Arnold & Zeiss *12,500
W. R. Grace & Co. *25,000
General Rubber Co. *150,000
Johnstone, Whitworth & Co. ... *140,000
Rumsey & Greutert Co., Inc. ... *27,500
Robinson & Co. *8,000
Hodgman Rubber Co. *2,500
Charles T. Wilson *165,000
L. Littlejohn & Co. *72,000
Various *250,000 *1,020,000

OCTOBER 30.—By the *Cedric*=Liverpool;
General Rubber Co. *225,000
Meyer & Brown *6,000
Various *80,000 *311,000

OCTOBER 31.—By the *Lusitania*=Liverpool:
Robinson & Co. *27,000
Johnstone, Whitworth & Co. ... *7,000 *34,000

NOVEMBER 4.—By the *Minnetonka*=London:
Meyer & Brown *140,000
General Rubber Co. *365,000
Henderson & Korn *175,000
L. Littlejohn & Co. *100,000
Robert Badenhop *26,000
Ed. Maurer *80,000
Charles T. Wilson *60,000
Johnstone, Whitworth & Co. ... *210,000
Ed. Boustead *11,200
Rumsey & Greutert Co., Inc. ... *33,500
Aldens' Successors, Ltd. *473,546
Robinson & Co. *6,000
Various *405,000 *2,075,246

NOVEMBER 7.—By the *Lapland*=Liverpool:
Arnold & Zeiss *7,000
Various *6,000 *13,000

NOVEMBER 9.—By the *Menominee*=London:
Henderson & Korn *30,000
General Rubber Co. *50,000
Rumsey & Greutert Co., Inc. ... *2,500
Robert Badenhop *15,000
Aldens' Successors, Ltd. *50,902
Various *77,000 *225,402

NOVEMBER 11.—By the *Rydal Hall*=Colombo:
Meyer & Brown *230,700
Rubber & Guayule Agency, Inc.. *90,000
Henderson & Korn *50,000
L. Littlejohn & Co. *30,000
Arnold & Zeiss *7,000
Rumsey & Greutert Co., Inc. ... *7,000
Various *85,000 *499,700

NOVEMBER 12.—By the *Manitou*=London:
Meyer & Brown *55,000
Otto Isenstein *45,000
General Rubber Co. *130,000
Adolph Hirsch & Co. *11,200
Johnstone, Whitworth & Co. ... *80,000
Arnold & Zeiss *8,000
Rumsey & Greutert Co., Inc. ... *7,000
Various *250,000 *586,200

NOVEMBER 14.—By the *Baltic*=Liverpool:
Arnold & Zeiss *2,200

NOVEMBER 16.—By the *Indraghiri*=Singapore:
Ed. Boustead & Co. *22,500
W. R. Grace & Co. *11,200
L. Littlejohn & Co. *65,000
Hadden & Co. *45,000
Johnstone, Whitworth & Co. ... *25,000
Meyer & Brown *2,200
Various *210,000 *380,900

NOVEMBER 18.—By the *Minnewaska*=London:
General Rubber Co. *135,000
Charles T. Wilson & Co., Inc... *75,000
L. Littlejohn & Co. *50,000
Ed. Maurer *45,000
Arnold & Zeiss *25,000
Meyer & Brown *25,000
Robinson & Co. *22,500
Earle Bros. *22,500
Aldens' Successors, Ltd. 24,454
Malaysian Rubber Co. *11,200
Rumsey & Greutert Co., Inc. ... *1,500
Various *160,000 *597,154

NOVEMBER 21.—By the *Adriatic*=Liverpool:
Johnstone, Whitworth & Co. *7,000

NOVEMBER 23.—By the *Philadelphia*=Liverpool:
Various *33,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW ORLEANS—OCTOBER, 1914.

Imports:	Pounds.	Value.
India rubber	5,450	$1,095
Guayule	10,802	4,341
Total	16,252	$5,436

PORT OF PHILADELPHIA—OCTOBER, 1914.

Imports:		
Rubber scrap	60,738	$2,844

PORT OF BOSTON—OCTOBER, 1914.

Imports:		
India rubber	26,381	$10,968

PORT OF CHICAGO—OCTOBER, 1914.

Imports:		
Rubber scrap	59,120	$4,081

PORT OF NIAGARA FALLS—OCTOBER, 1914.

Imports:		
India rubber	114,630	$70,461

PORT OF DETROIT—OCTOBER, 1914.

Imports:		
Rubber scrap	10,273	$383
Exports:		
Rubber scrap	4,476	$374
Rubber reclaimed	50,245	8,462

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INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of September, 1914, and for the first nine months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
September, 1914	$211,431	$107,429	$485,659	$804,519
January-August	1,436,030	562,475	4,709,723	6,708,228
Nine months, 1914....	$1,647,461	$669,904	$5,195,382	$7,512,747
Nine months, 1913....	1,891,785	982,953	6,546,215	9,420,953
Nine months, 1912....	1,888,433	1,014,688	6,016,371	8,919,492
Nine months, 1911....	1,701,441	1,349,380	5,402,984	8,453,805
Nine months, 1910....	1,592,594	1,664,215	4,258,968	7,515,777

The above heading, "All Other Rubber," for the month of September, 1914, and for the first nine months of three calendar years, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
September, 1914.....	$266,259	$24,029	$290,288
January-August	2,290,094	329,215	2,619,309
Nine months, 1914.....	$2,556,353	$353,244	$2,909,597
Nine months, 1913.....	3,244,015	429,668	3,673,683
Nine months, 1912.....	2,533,635	443,443	2,977,078

GEORGE E. PELL A RUBBER BROKER.

Early in November Mr. George E. Pell opened an office as a general rubber broker in the Produce Exchange Annex, New York. Mr. Pell ought certainly to be very familiar with crude rubber, as there are very few men in the trade who have viewed it from so many different standpoints. About 15 years ago he went to Para, and remained there and in Manaos for 5 years, being associated first with Geo. A. Alden & Co. and later with Gordon & Co. While in Manaos he was the American consular agent. About ten years ago he returned to America and became connected with the General Rubber Co. In this association he made quite an extended visit to the guayule territory of Mexico, some six years ago, and within the last year or two he has visited the great rubber plantation in Sumatra in which the United States Rubber Co. is interested. At the Rubber Exhibition held in New York in the fall of 1912 Mr. Pell acted as the official representative of the Commercial Association of Para.

Messrs. R. A. & C. H. Loewenthal, treasurer and secretary, respectively, of the U. S. Rubber Reclaiming Co., Inc., with factories at Buffalo and offices in the Forty-Second Street building, have recently made application to the Supreme Court to have the name changed to "Low," in consequence of the fact that official notification has gone forth that passports issued in any German name will hardly facilitate travel to the bearer in England, France or Russia; and as both these gentlemen have occasion to make frequent trips abroad they have decided that the change would very materially promote their convenience. In addition to the inconvenience before described the name was seldom properly spelled, so that the change from Loewenthal to Low will effect an advantage in this respect.

In accordance with its usual Thanksgiving custom, the Monatiquot Rubber Works Co., of South Braintree, Mass., presented its married employes with turkeys, while the unmarried received cigars and candy.